

STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

FORM 3

AMENDED REPORT ☐  
(highlight changes)

APPLICATION FOR PERMIT TO DRILL				5. MINERAL LEASE NO: ST ML 22798	6. SURFACE: State
1A. TYPE OF WORK: DRILL <input checked="" type="checkbox"/> REENTER <input type="checkbox"/> DEEPEN <input type="checkbox"/>				7. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A	
B. TYPE OF WELL: OIL <input type="checkbox"/> GAS <input checked="" type="checkbox"/> OTHER _____ SINGLE ZONE <input type="checkbox"/> MULTIPLE ZONE <input checked="" type="checkbox"/>				8. UNIT or CA AGREEMENT NAME: 891008900A	
2. NAME OF OPERATOR: Kerr-McGee Oil & Gas Onshore, LP				9. WELL NAME and NUMBER: NBU 1022-32D4DS	
3. ADDRESS OF OPERATOR: P.O. Box 173779 CITY Denver STATE CO ZIP 80217-3779				PHONE NUMBER: (720) 929-6226	
4. LOCATION OF WELL (FOOTAGES) AT SURFACE: 192' FNL & 2096' FWL LAT 39.912181 LON -109.464783 (NAD 27) AT PROPOSED PRODUCING ZONE: NWNW 1240' FNL & 1050' FWL, Sec. 32, T10S, R22E 631233 X 44189124 39.912030 -109.464624 630919 X 44185834 39.909120 -109.468373				10. FIELD AND POOL, OR WILDCAT: Natural Buttes Field	
11. QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: NENW 32 10S 22E				12. COUNTY: Uintah	
13. STATE: UTAH				14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE: 21.75 miles southeast of Ouray, Utah	
15. DISTANCE TO NEAREST PROPERTY OR LEASE LINE (FEET) 192'		16. NUMBER OF ACRES IN LEASE: 640		17. NUMBER OF ACRES ASSIGNED TO THIS WELL: 10	
18. DISTANCE TO NEAREST WELL (DRILLING, COMPLETED, OR APPLIED FOR) ON THIS LEASE (FEET) 500'		19. PROPOSED DEPTH: 8,851		20. BOND DESCRIPTION: RLB0005237	
21. ELEVATIONS (SHOW WHETHER DF, RT, GR, ETC.): 5449' GR		22. APPROXIMATE DATE WORK WILL START:		23. ESTIMATED DURATION: 10 days	

24. PROPOSED CASING AND CEMENTING PROGRAM							
SIZE OF HOLE	CASING SIZE, GRADE, AND WEIGHT PER FOOT			SETTING DEPTH	CEMENT TYPE, QUANTITY, YIELD, AND SLURRY WEIGHT		
12 1/4"	9 5/8"	J-55	36#	2,400	Premium Cement	215 sx	1.18 15.6
					Premium Cement	50 sx	1.18 15.6
7 7/8"	4 1/2"	I-80	11.6#	8,500	Premium Lite II	340 sx	3.38 11.0
					50/50 Poz G	1310 sx	1.31 14.3

25. ATTACHMENTS	
VERIFY THE FOLLOWING ARE ATTACHED IN ACCORDANCE WITH THE UTAH OIL AND GAS CONSERVATION GENERAL RULES:	
<input checked="" type="checkbox"/> WELL PLAT OR MAP PREPARED BY LICENSED SURVEYOR OR ENGINEER	<input checked="" type="checkbox"/> COMPLETE DRILLING PLAN
<input checked="" type="checkbox"/> EVIDENCE OF DIVISION OF WATER RIGHTS APPROVAL FOR USE OF WATER	<input type="checkbox"/> FORM 5, IF OPERATOR IS PERSON OR COMPANY OTHER THAN THE LEASE OWNER

NAME (PLEASE PRINT) Kevin McIntyre TITLE Regulatory Analyst I

SIGNATURE Kevin McIntyre DATE 7/2/2008

(This space for State use only)

Approved by the  
Utah Division of  
Oil, Gas and Mining

RECEIVED  
JUL 08 2008

API NUMBER ASSIGNED: 43047-40207

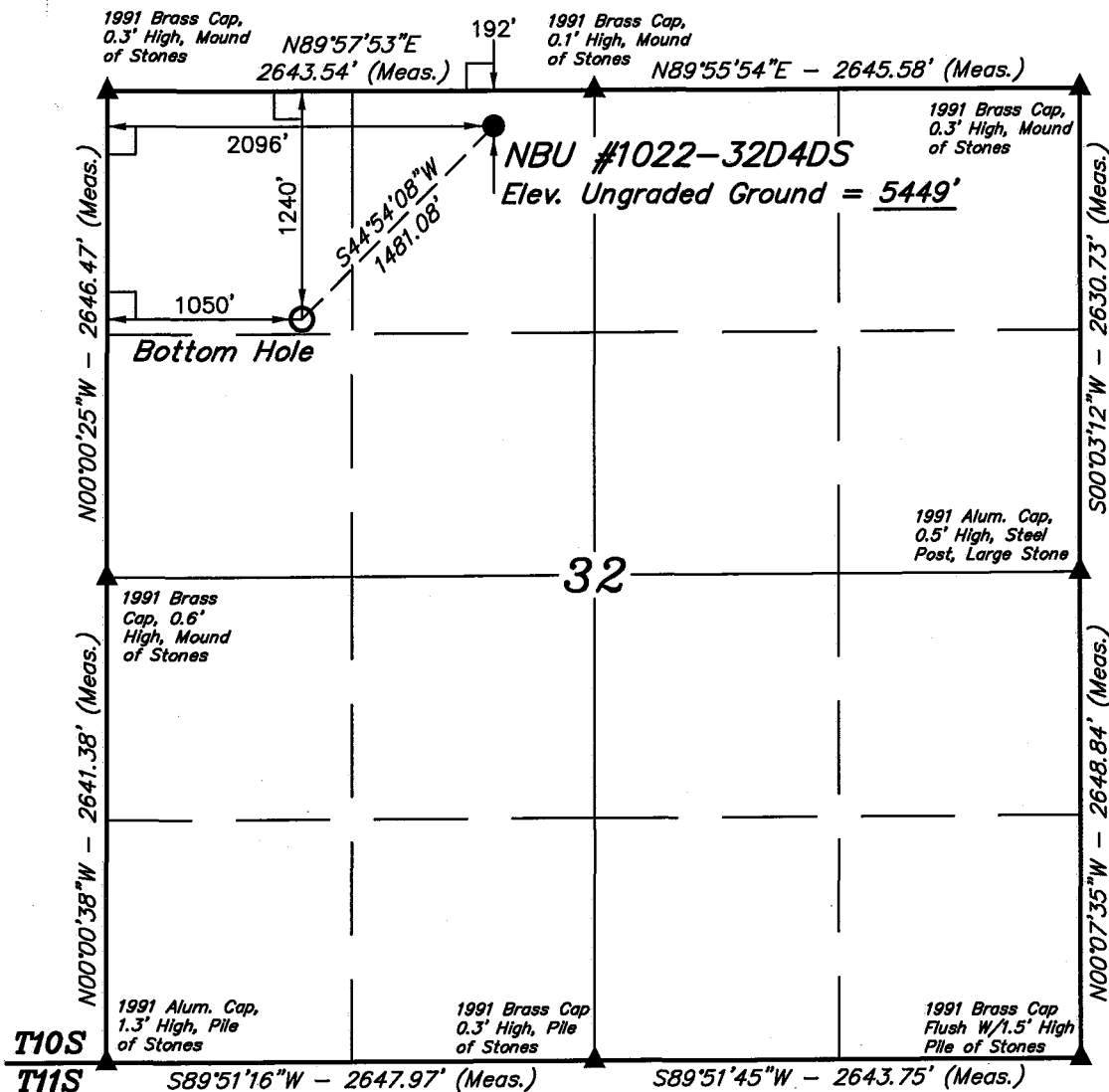
APPROVAL: [Signature]

Date: 7/2/2008

By: [Signature]

DIV. OF OIL, GAS & MINING

**T10S, R22E, S.L.B.&M.**



**Kerr-McGee Oil & Gas Onshore LP**

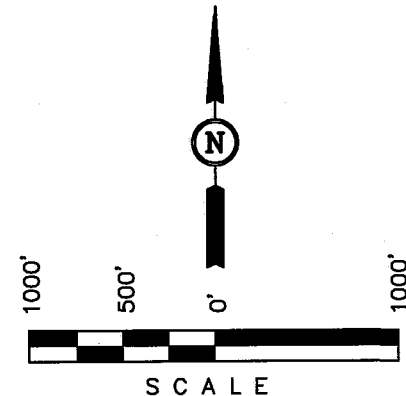
Well location, NBU #1022-32D4DS, located as shown in the NE 1/4 NW 1/4 of Section 32, T10S, R22E, S.L.B.&M. Uintah County, Utah.

**BASIS OF ELEVATION**

TWO WATER TRIANGULATION STATION LOCATED IN THE NW 1/4 OF SECTION 1, T10S, R21E, S.L.B.&M. TAKEN FROM THE BIG PACK MTN NE, QUADRANGLE, UTAH, UTAH COUNTY, 7.5 MINUTE QUAD. (TOPOGRAPHIC MAP) PUBLISHED BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY. SAID ELEVATION IS MARKED AS BEING 5238 FEET.

**BASIS OF BEARINGS**

BASIS OF BEARINGS IS A G.P.S. OBSERVATION.



**CERTIFICATE**

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

**NO. 161319**

**ROBERT L. KAY**  
 REGISTERED LAND SURVEYOR  
 REGISTRATION NO. 161319  
 STATE OF UTAH

**LEGEND:**

- └─┘** = 90° SYMBOL
- = PROPOSED WELL HEAD.
- ▲** = SECTION CORNERS LOCATED.

NAD 83 (TARGET BOTTOM HOLE)	NAD 83 (SURFACE LOCATION)
LATITUDE = 39°54'33.37" (39.909269)	LATITUDE = 39°54'43.73" (39.912147)
LONGITUDE = 109°28'09.09" (109.469192)	LONGITUDE = 109°27'55.68" (109.465467)
NAD 27 (TARGET BOTTOM HOLE)	NAD 27 (SURFACE LOCATION)
LATITUDE = 39°54'33.49" (39.909303)	LATITUDE = 39°54'43.85" (39.912181)
LONGITUDE = 109°28'06.63" (109.468508)	LONGITUDE = 109°27'53.22" (109.464783)

**UINTAH ENGINEERING & LAND SURVEYING**  
**85 SOUTH 200 EAST - VERNAL, UTAH 84078**  
**(435) 789-1017**

SCALE 1" = 1000'	DATE SURVEYED: 05-21-08	DATE DRAWN: 05-29-08
PARTY D.K. C.K. C.C.	REFERENCES G.L.O. PLAT	
WEATHER WARM	FILE Kerr-McGee Oil & Gas Onshore LP	

**NBU 1022-32D4DS  
NENW Sec. 32, T10S,R22E  
UINTAH COUNTY, UTAH  
ST ML 22798**

**ONSHORE ORDER NO. 1**

***DRILLING PROGRAM***

**1. Estimated Tops of Important Geologic Markers:**

<u>Formation</u>	<u>Depth</u>
Uinta	0- Surface
Green River	956'
Birds Nest	1312'
Mahogany	1670'
Wasatch	4022'
Mesaverde	6469'
MVU2	7454'
MVL1	8076'
TVD	8500'
TD	8851'

**2. Estimated Depths of Anticipated Water, Oil, Gas, or Mineral Formations:**

<u>Substance</u>	<u>Formation</u>	<u>Depth</u>
	Green River	956'
Water	Birds Nest	1312'
Water	Mahogany	1670'
Gas	Wasatch	4022'
Gas	Mesaverde	6469'
Gas	MVU2	7454'
Gas	MVL1	8076'
Water	N/A	
Other Minerals	N/A	

**3. Pressure Control Equipment (Schematic Attached)**

*Please refer to the attached Drilling Program.*

**4. Proposed Casing & Cementing Program:**

*Please refer to the attached Drilling Program.*

**5. Drilling Fluids Program:**

*Please refer to the attached Drilling Program.*

6. **Evaluation Program:**

*Please refer to the attached Drilling Program.*

7. **Abnormal Conditions:**

Maximum anticipated bottomhole pressure calculated at 8500' TVD, approximately equals 5270 psi (calculated at 0.62 psi/foot).

Maximum anticipated surface pressure equals approximately 3400 psi (bottomhole pressure minus the pressure of a partially evacuated hole calculated at 0.22 psi/foot).

8. **Anticipated Starting Dates:**

*Drilling is planned to commence immediately upon approval of this application.*

9. **Variances:**

*Please refer to the attached Drilling Program.*

*Onshore Order #2 – Air Drilling Variance*

*Kerr-McGee Oil & Gas Onshore LP (KMG) respectfully requests a variance to several requirements associated with air drilling outlined in Onshore Order 2*

- *Blowout Prevention Equipment (BOPE) requirements;*
- *Mud program requirements; and*
- *Special drilling operation (surface equipment placement) requirements associated with air drilling.*

*This Standard Operating Practices addendum provides supporting information as to why KMG current air drilling practices for constructing the surface casing hole should be granted a variance to Onshore Order 2 air drilling requirements.*

*The reader should note that the air rig is used only to construct a stable surface casing hole through a historically difficult lost circulation zone. A conventional rotary rig follows the air rig, and is used to drill and construct the majority of the wellbore.*

*More notable, KMG has used the air rig layout and procedures outlined below to drill the surface casing hole in approximately 675 wells without incident of blow out or loss of life.*

*Background*

*In a typical well, KMG utilizes an air rig for drilling the surface casing hole, an interval from the surface to surface casing depths, which varies in depth from 1,700 to 2,800 feet.*

*The air rig drilling operation does not drill through productive or over pressured formations in KMG field, but does penetrate the Uinta and Green River Formations. The purpose of the air drilling operation is to overcome the severe loss circulation zone in the Green River known as the Bird's Nest while creating a stable hole for the surface casing. The surface casing hole is generally drilled to approximately 500 feet below the Bird's Nest.*

*Before the surface air rig is mobilized, a rathole rig is utilized to set and cement conductor pipe through a competent surface formation. Generally, the conductor is set at 40 feet. In some cases, conductor may be set deeper in areas that the surface formation is*

*not found competent. This rig also drills the rat and mouse holes in preparation for the surface casing and production string drilling operations.*

*The air rig is then mobilized to drill the surface casing hole by drilling a 12-1/4 inch hole to just above the Bird's Nest interval with an air hammer. The hammer is then tripped and replaced with a 12-1/4 inch tri-cone bit. The tri-cone bit is used to drill to the surface casing point, approximately 500 feet below the loss circulation zone (Bird's Nest). The 9-5/8 inch surface casing is then run and cemented in place, thereby isolating the lost circulation zone.*

*KMG fully appreciates Onshore Order 2 well control and safety requirements associated with a typical air drilling operations. However, the requirements of Onshore Order 2 are excessive with respect to the air rig layout and drilling operation procedures that are currently in practice to drill and control the surface casing hole in KMG Fields.*

#### *Variance for BOPE Requirements*

*The air rig operation utilizes a properly lubricated and maintained air bowl diverter system which diverts the drilling returns to a six-inch blooie line. The air bowl is the only piece of BOPE equipment which is installed during drilling operations and is sufficient to contain the air returns associated with this drilling operation. As was discussed earlier, the drilling of the surface hole does not encounter any over pressured or productive zones, and as a result standard BOPE equipment should not be required. In addition, standard drilling practices do not support the use of BOPE on 40 feet of conductor pipe.*

#### *Variance for Mud Material Requirements*

*Onshore Order 2 also states that sufficient quantities of mud materials shall be maintained or readily accessible for the purpose of assuring adequate well control. Once again, the surface hole drilling operations does not encounter over pressured or productive intervals, and as a result there is not a need to control pressure in the surface hole with a mud system. Instead of mud, the air rigs utilize water from the reserve pit for well control, if necessary. A skid pump which is located near the reserve pit (see attachment) will supply the water to the well bore.*

*Variance for Special Drilling Operation (surface equipment placement) Requirements*  
*Onshore Order 2 requires specific safety distances or setbacks for the placement of associated standard air drilling equipment, wellbore, and reserve pits. The air rigs used to drill the surface holes are not typical of an air rig used to drill a producing hole in other parts of the US. These are smaller in nature and designed to fit a KMG location. The typical air rig layout for drilling surface hole in the field is attached.*

*Typically the blooie line discharge point is required to be 100 feet from the well bore. In the case of a KMG well, the reserve pit is only 45 feet from the rig and is used for the drill cuttings. The blooie line, which transports the drill cuttings from the well to the reserve pit, subsequently discharges only 45 feet from the well bore.*

*Typically the air rig compressors are required to be located in the opposite direction from the blooie line and a minimum of 100 feet from the well bore. At the KMG locations, the air rig compressors are approximately 40 feet from the well bore and approximately 60 feet from the blooie line discharge due to the unique air rig design. The air compressors (see attachment) are located on the rig (1250 cfm) and on a standby trailer (1170 cfm). A*

*booster sits between the two compressors and boosts the output from 350 psi to 2000 psi. The design does put the booster and standby compressor opposite from the blooie line.*

*Lastly, Onshore Order 2 addresses the need for an automatic igniter or continuous pilot light on the blooie line. The air rig does not utilize an igniter as the surface hole drilling operation does not encounter productive formations.*

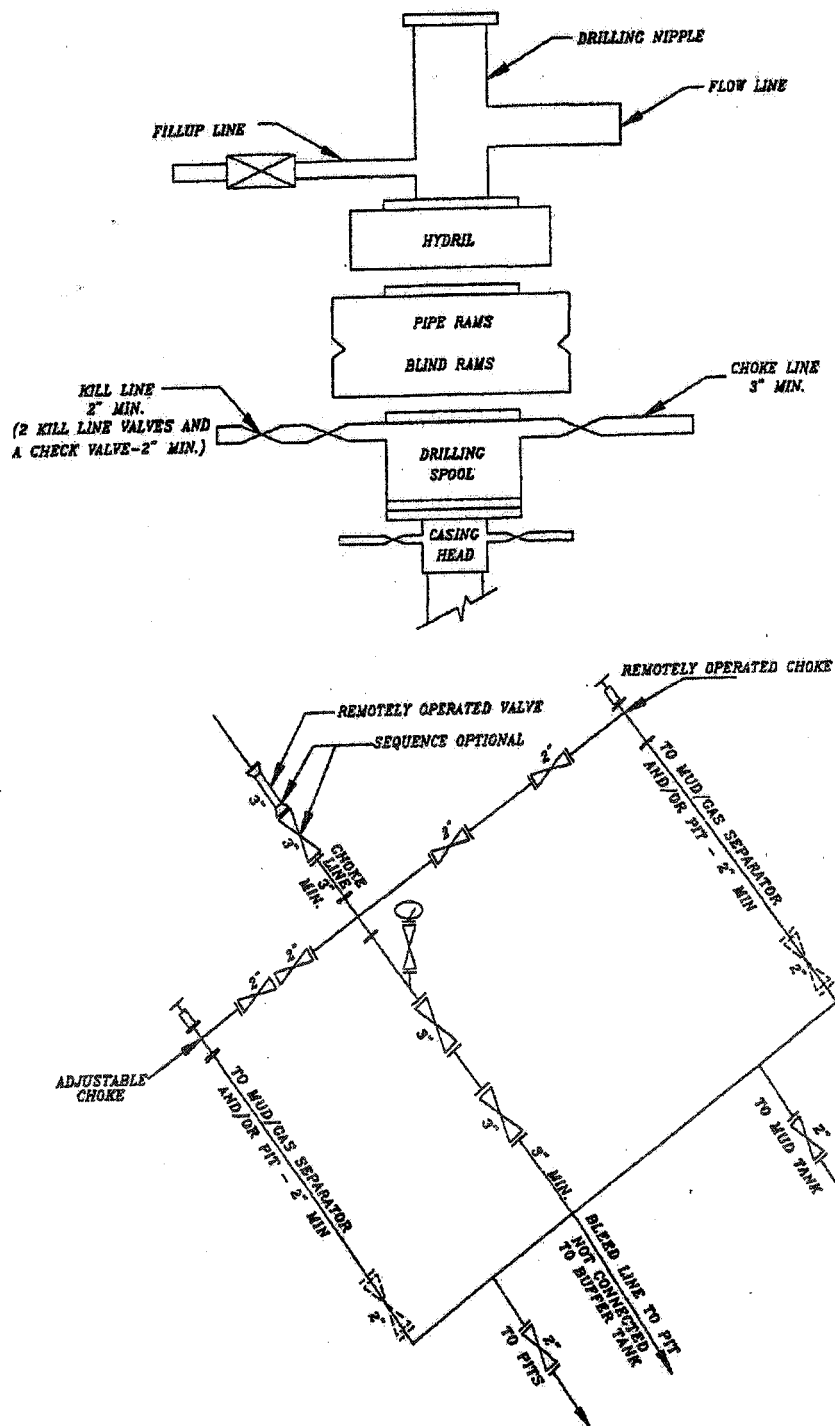
*Conclusion*

*The air rig operating procedures and the attached air rig layout have effectively maintained well control while drilling the surface holes in KMG Fields. KMG respectfully requests a variance from Onshore Order 2 with respect to air drilling well control requirements as discussed above.*

**10. Other Information:**

*Please refer to the attached Drilling Program.*

EXHIBIT A



SCHEMATIC DIAGRAM OF 5,000 PSI BOP STACK

**NBU 1022-32D4DS  
NENW SEC. 32, T10S, R22E  
UINTAH COUNTY, UTAH  
ST ML 22798**

**ONSHORE ORDER NO. 1**

***MULTI-POINT SURFACE USE & OPERATIONS PLAN***

**Directional Drilling:**

In accordance with Oil & Gas Conservation Rule R649-3-11 pertaining to Directional Drilling, this well will be directionally drilled in order to access portions of our lease which are otherwise inaccessible due to topography.

**1. Existing Roads:**

Refer to Topo Map A for directions to the location.

Refer to Topo Maps A and B for location of access roads within a 2-mile radius.

Refer to Topo Maps A and B for location of access roads within a 2 mile radius.

All existing roads will be maintained and kept in good repair during all drilling and completion operations associated with this well.

**2. Planned Access Roads:**

Approximately 0.2 mi. +/- of access road re-route is proposed. Please refer to the attached Topo Map B.

The upgraded and new portions of the access road will be crowned and ditched with a running surface of 18 feet and a maximum disturbed width of 30 feet. Appropriate water control will be installed to control erosion.

*Existence of pipelines; maximum grade; turnouts; major cut and fills, culverts, or bridges; gates, cattle guards, fence cuts, or modifications to existing facilities were determined at the on-site.*

The access road was centerline flagged during time of staking.

Surfacing material may be necessary, depending upon weather conditions.

Surface disturbance and vehicular traffic will be limited to the approved location and approved access route. Any additional area needed will be approved in advance.

**3. Location of Existing Wells Within a 1-Mile Radius:**

Please refer to Topo Map C.

**4. Location of Existing & Proposed Facilities:**

*The following guidelines will apply if the well is productive.*

All production facilities will be located on the disturbed portion of the well pad and at a minimum of 25 feet from the toe of the back slope or the top of the fill slope.

A dike will be constructed completely around those production facilities which contain

fluids (i.e., production tanks, produced water tanks, and/or heater/treater). These dikes will be constructed of compacted subsoil, be impervious, hold 100% of the capacity of the largest tank, and be independent of the back cut.

All permanent (on-site six months or longer) above the ground structures constructed or installed, including pumping units, will be painted a flat, non-reflective, earthtone color to match one of the standard environmental colors, as determined by the five state Rocky Mountain Inter-Agency Committee.

All facilities will be painted within six months of installation. Facilities required to comply with the Occupational Safety and Health Act (OSHA) will be excluded. The required color is Carlsbad Canyon, standard color number 2.5Y 6/2.

Any necessary pits will be properly fenced to protect livestock and prevent wildlife entry.

**Approximately 1,019' of 4" pipeline is proposed. Refer to Topo D for the proposed pipeline.**

**5. Location and Type of Water Supply:**

Water for drilling purposes will be obtained from Dalbo Inc.'s underground well located in Ouray, Utah, Sec. 32, T4S, R3E, Water User Claim #43-8496, Application #53617.

Water will be hauled to location over the roads marked on Maps A and B.

No water well is to be drilled on this lease.

**6. Source of Construction Materials:**

Surface and subsoil materials in the immediate area will be utilized.

Any gravel will be obtained from a commercial source.

**7. Methods of Handling Waste Materials:**

Drill cuttings will be contained and buried in the reserve pit.

Drilling fluids, including salts and chemicals, will be contained in the reserve pit. Upon termination of drilling and completion operations, the liquid contents of the reserve pit will be removed and disposed of at an approved waste disposal facility within 120 days after drilling is terminated.

The reserve pit will be constructed on the location and will not be located within natural drainage, where a flood hazard exists or surface runoff will destroy or damage the pit

walls. The reserve pit will be constructed so that it will not leak, break, or allow discharge of liquids.

A plastic reinforced liner and felt will be used, it will be a minimum of 20 mil thick, with sufficient bedding used to cover any rocks. The liner will overlap the pit walls and be covered with

dirt and/or rocks to hold it in place. No trash or scrap that could puncture the liner will be disposed of in the pit.

Any spills of oil, gas, salt water, or other noxious fluids will be immediately cleaned up and removed to an approved disposal site.

A chemical porta-toilet will be furnished with the drilling rig.

Garbage, trash, and other waste materials will be collected in a portable, self-contained, fully enclosed trash cage during operations. No trash will be burned on location.

All debris and other waste material not contained in the trash cage will be cleaned up and removed from the location immediately after removal of the drilling rig.

Any open pits will be fenced during the operations. The fencing will be maintained until such time as the pits are backfilled.

No chemicals subject to reporting under SARA Title III (hazardous materials) in an amount greater than 10,000 pounds will be used, produced, stored, transported, or disposed of annually in association with the drilling of this well. Furthermore, no extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, will be used, produced, stored, transported, or disposed of in association with the drilling of this well.

Any produced water from the proposed well will be contained in a water tank and will then be hauled By truck to one of the pre-approved disposal sites: RNI, Sec. 5, T9S, R22E, NBU #159, Sec. 35, T9S, R21E, Ace Oilfield, Sec. 2, T6S, R20E, MC&MC, Sec. 12, T6S, R19E, Pipeline Facility, Sec. 36, T9S, R20E, Goat Pasture Evaporation Pond, SW/4 Sec. 16, T10S, R22E, Bonanza Evaporation Pond, Sec. 2, T10S, R23E.

8. **Ancillary Facilities:**

None are anticipated.

9. **Well Site Layout:** (See Location Layout Diagram)

The attached Location Layout Diagram describes drill pad cross-sections, cuts and fills, and locations of the mud tanks, reserve pit, flare pit, pipe racks, trailer parking, spoil dirt stockpile(s), and surface material stockpile(s).

Please see the attached diagram to describe rig orientation, parking areas, and access roads.

The reserve pit will be lined, and when the reserve pit is closed, the pit liner will be buried below plow depth.

All pits will be fenced according to the following minimum standards:

39 inch net wire will be used with at least one strand of barbed wire on top of the net wire. Barbed wire is not necessary if pipe or some type of reinforcement rod is attached to the top of the entire fence.

The net wire shall be no more than two inches above the ground. The barbed wire shall be three inches over the net wire. Total height of the fence shall be at least 42 inches.

Corner posts shall be cemented and/or braced in such a manner to keep the fence tight at all times.

Standard steel, wood, or pipe posts shall be used between the corner braces. Maximum distance between any 2 fence posts shall be no greater than 16 feet.

All wire shall be stretched, by using a stretching device, before it is attached to corner posts.

The reserve pit fencing will be on three sides during drilling operations, and on the fourth side when the rig moves off location. Pits will be fenced and maintained until cleanup.

Location size may change prior to the drilling of the well due to current rig availability. If the proposed location is not large enough to accommodate the drilling rig the location will be re-surveyed and a Form 9 shall be submitted.

#### 10. Plans for Reclamation of the Surface:

##### *Producing Location:*

Immediately upon well completion, the location and surrounding area will be cleared of all unused tubing, materials, trash, and debris not required for production.

Immediately upon well completion, any hydrocarbons in the pit shall be removed in accordance with 43 CFR 3162.7-1.

A plastic, nylon reinforced liner will be used, it shall be torn and perforated before backfilling of the reserve pit.

Before any dirt work associated with location restoration takes place, the reserve pit shall be as dry as possible. All debris in it will be removed. Other waste and spoil materials will be disposed of immediately upon completion of operations.

The reserve pit and that portion of the location not needed for production facilities/operations will be recontoured to the approximate natural contours. The reserve pit will be reclaimed within 90 days from the date of well completion, weather permitting.

To prevent surface water (s) from standing (ponding) on the reclaimed reserve pit area, final reclamation of the reserve pit will consist of "mounding" the surface three feet above surrounding ground surface to allow the reclaimed pit area to drain effectively.

Upon completion of backfilling, leveling, and recontouring, the stockpiled topsoil will be spread evenly over the reclaimed area(s).

##### *Dry Hole/Abandoned Location:*

Abandoned well sites, roads, and other disturbed areas will be restored as near as practical to their original condition. Where applicable, these conditions include the re-establishment of irrigation systems, the re-establishment of appropriate soil conditions, and re-establishment of vegetation as specified.

All disturbed surfaces will be recontoured to the approximate natural contours, with reclamation of the well pad and access road to be performed as soon as practical after final abandonment. Reseeding operations will be performed after completion of other reclamation operations.

**11. Surface/Mineral Ownership:**

SITLA  
675 East 500 South, Suite 500  
Salt Lake City, UT 84102

**12. Other Information:**

All lease and/or unit operations will be conducted in such a manner that full compliance is made with all applicable laws, regulations, the approved Plan of Operations, and any applicable Notice of Lessees. The Operator is fully responsible for the actions of his subcontractors. A copy of these conditions will be furnished to the field representative to ensure compliance.

The Operator will control noxious weeds along Rights-Of-Way for roads, pipelines, well sites, or other applicable facilities.

A Class III archaeological survey will be submitted when report becomes available.

This location is not within 460' from the boundary of the Natural Buttes Unit, nor is it within 460' of any non-committed tract lying within the boundaries of the Unit.

**13. Lessee's or Operators's Representative & Certification:**

Kevin McIntyre  
Regulatory Analyst  
Kerr-McGee Oil & Gas Onshore LP  
P.O. Box 173779  
Denver, CO 80217-3779  
(720) 929-6226

Randy Bayne  
Drilling Manager  
Kerr-McGee Oil & Gas Onshore LP  
1368 South 1200 East  
Vernal, UT 84078  
(435)781-7018

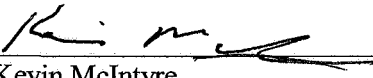
Certification: All lease and/or unit operations will be conducted in such a manner that full compliance is made with all applicable laws, regulations, Onshore Oil and Gas Orders, the approved Plan of Operations, and any applicable Notice to Lessees.

The Operator will be fully responsible for the actions of its subcontractors. A complete copy of the approved "Application for Permit to Drill" will be furnished to the field representative(s) to ensure compliance and shall be on location during all construction and drilling operations.

Kerr-McGee Oil & Gas Onshore LP is considered to be the operator of the subject well. Kerr-McGee Oil & Gas Onshore LP agrees to be responsible under terms and conditions of the lease for the operations conducted upon leased lands.

Bond coverage pursuant to 43 CFR 3104 for lease activities is being provided by State Surety Bond #RLB0005237.

I hereby certify that I, or persons under my supervision, have inspected the proposed drill site and access route, that I am familiar with the conditions that currently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and the work associated with the operations proposed herein will be performed by the Operator, its contractors, and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

  
Kevin McIntyre

7/2/2008  
Date

## **Paleontological Reconnaissance Survey Report**

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**Survey of Kerr McGee's Proposed Well Pads, Access Roads, and  
Pipelines for "NBU #921-27, C2D, D2DS, D2AS, C2AS  
(Pad 57N)" (Sec. 27, T 9 S, R 21 E) & "NBU  
#1022-32, B3S, D4DS, D4AS, D1S"  
(Sec. 32, T 10 S, R 22 E)**

Archy Bench & Ouray SE  
Topographic Quadrangle  
Uintah County, Utah

June 11, 2008

Prepared by Stephen D. Sandau  
Paleontologist for  
Intermountain Paleo-Consulting  
P. O. Box 1125  
Vernal, Utah 84078

## INTRODUCTION

At the request of Raleen White of Kerr McGee Oil & Gas Onshore LP and authorized by James Kirkland of the Office of the State Paleontologist, a paleontological reconnaissance survey of Kerr McGee's proposed "NBU #921-27, C2D, D2DS, D2AS, C2AS (Pad 57N)" (Sec. 27, T 9 S, R 21 E) & "NBU #1022-32, B3S, D4DS, D4AS, D1S" (Sec. 32, T 10 S, R 22 E) was conducted by Stephen Sandau and Daniel Burk on June 3, 2008. The survey was conducted under Utah Paleontological Investigations Permit #07-356. This survey to collect any paleontological materials discovered during the construction processes in danger of damage or destruction was done to meet requirements of the National Environmental Policy Act of 1969, and other State and Federal laws and regulations that protect paleontological resources.

## FEDERAL AND STATE REQUIREMENTS

As mandated by the State of Utah, paleontologically-sensitive geologic formations on State lands that may be impacted due to ground disturbance require paleontological evaluation. This requirement complies with:

- 1) The National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et. Seq., P.L. 91-190);
- 2) The Federal Land Policy and Management Act (FLPMA) of 1976 (90 Stat. 2743, 43 U.S.C. § 1701-1785, et. Seq., P.L. 94-579).
- 3) The National Historic Preservation Act. 16 U.S.C. § 470-1, P.L. 102-575 in conjunction with 42 U.S.C. § 5320; and
- 4) The Utah Geological Survey. S. C. A.: 63-73-1. (1-21) and U.C.A.: 53B-17-603.

The new Potential Fossil Yield Classification (PFYC) System (October, 2007) replaces the Condition Classification System from Handbook H-8270-1. Geologic units are classified based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher potential.

- **Class 1 – Very Low.** Geologic units (igneous, metamorphic, or Precambrian) not likely to contain recognizable fossil remains.
- **Class 2 – Low.** Sedimentary geologic units not likely to contain vertebrate fossils or scientifically significant non-vertebrate fossils. (Including modern eolian, fluvial, and colluvial deposits etc...)
- **Class 3 – Moderate or Unknown.** Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential.
  - **Class 3a – Moderate Potential.** The potential for a project to be sited on or impact a significant fossil locality is low, but is somewhat higher for common fossils.
  - **Class 3b – Unknown Potential.** Units exhibit geologic features and preservational conditions that suggest significant fossils could be present, but little information about the paleontological resources of the unit or the area is known.
- **Class 4 – High.** Geologic units containing a high occurrence of vertebrate fossils or scientifically significant invertebrate or plant fossils, but may vary in abundance and predictability.

- *Class 4a* – Outcrop areas with high potential are extensive (greater than two acres) and paleontological resources may be susceptible to adverse impacts from surface disturbing actions.
- *Class 4b* – Areas underlain by geologic units with high potential but have lowered risks of disturbance due to moderating circumstances such as a protective layer of soil or alluvial material; or outcrop areas are smaller than two contiguous acres.
- *Class 5 – Very High.* Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils.
  - *Class 5a* - Outcrop areas with very high potential are extensive (greater than two acres) and paleontological resources may be susceptible to adverse impacts from surface disturbing actions.
  - *Class 5b* - Areas underlain by geologic units with very high potential but have lowered risks of disturbance due to moderating circumstances such as a protective layer of soil or alluvial material; or outcrop areas are smaller than two contiguous acres.

It should be noted that many fossils, though common and unimpressive in and of themselves, can be important paleo-environmental, depositional, and chronostratigraphic indicators.

## LOCATION

Kerr McGee's proposed well pads, access roads, and pipelines for "NBU #921-27, C2D, D2DS, D2AS, C2AS (Pad 57N)" (Sec. 27, T 9 S, R 21 E) & "NBU #1022-32, B3S, D4DS, D4AS, D1S" (Sec. 32, T 10 S, R 22 E) is located on lands managed by the State of Utah Trust Lands Administration (SITLA) one in the Cottonwood and Sand Wash area, 4 miles south of the White River, and approximately 9 miles southeast of Ouray, Utah, and the other in the East Bench area, approximately 16 miles southeast of Ouray, Utah. The project area can be found on the Archy Bench & Ouray SE 7.5 minute U. S. Geological Survey Quadrangle Maps, Uintah County, Utah.

## PREVIOUS WORK

The basins of western North America have long produced some of the richest fossil collections in the world. Early Cenozoic sediments are especially well represented throughout the western interior. Paleontologists started field work in Utah's Uinta Basin as early as 1870 (Betts, 1871; Marsh, 1871, 1875a, 1875b). The Uinta Basin is located in the northeastern corner of Utah and covers approximately 31,000 sq. km (12,000 sq. miles) ranging in elevation from 1,465 to 2,130 m (4,800 to 7,000 ft) (Marsell, 1964; Hamblin et al., 1987). Middle to late Eocene time marked a period of dramatic change in the climate, flora, (Stucky, 1992) and fauna (Black and Dawson, 1966) of North America.

## GEOLOGICAL AND PALEONTOLOGICAL OVERVIEW

Early in the geologic history of Utah, some 1,000 to 600 Ma, an east-west trending basin developed creating accommodation for 25,000 feet of siliclastics. Uplift of that filled-basin during the early Cenozoic formed the Uinta Mountains (Rasmussen et al., 1999). With the rise of the Uinta Mountains the asymmetrical synclinal Uinta Basin is thought to have formed through the effects of down warping in connection with the uplift. Throughout the Paleozoic and Mesozoic deposition fluctuated between marine and non-marine environments laying down a thick succession of sediments in the area now occupied by the Uinta Basin. Portions of these beds crop out on the margins of the basin due to tectonic events during the late Mesozoic.

Early Tertiary Uinta Basin sediments were deposited in alternating lacustrine and fluvial environments. Large shallow lakes periodically covered most of the basin and surrounding areas during early to mid Eocene time (Abbott, 1957). These lacustrine sediments show up in the western part of the basin, dipping 2-3 degrees to the northeast and are lost in the subsurface on the east side. The increase of cross-bedded, coarse-grained sandstone and conglomerates preserved in paleo-channels indicates a transition to a fluvial environment toward the end of the epoch.

Four Eocene formations are recognized in the Uinta Basin: the Wasatch, Green River, Uinta and Duchesne River, respectively (Wood, 1941). The Uinta Formation is subdivided into two lithostratigraphic units namely: the Wagonhound Member (Wood, 1934), formerly known as Uinta A and B (Osborn, 1895, 1929) and the Myton Member previously regarded as the Uinta C.

Within the Uinta Basin in northeast Utah, the Uinta Formation in the western part of the basin is composed primarily of lacustrine sediments inter-fingering with over-bank deposits of silt and mudstone and westward flowing channel sands and fluvial clays, muds, and sands in the east (Bryant et al, 1990; Ryder et al, 1976). Stratigraphic work done by early geologists and paleontologists within the Uinta Formation focused on the definition of rock units and attempted to define a distinction between early and late Uintan faunas (Riggs, 1912; Peterson and Kay, 1931; Kay 1934). More recent work focused on magnetostratigraphy, radioscopic chronology, and continental biostratigraphy (Flynn, 1986; Prothero, 1996). Well-known for its fossiliferous nature and distinctive mammalian fauna of mid-Eocene Age, the Uinta Formation is the type formation for the Uintan Land Mammal Age (Wood et al, 1941).

The Duchesne River Formation of the Uinta Basin in northeastern Utah is composed of a succession of fluvial and flood plain deposits composed of mud, silt and sandstone. The source area for these late Eocene deposits is from the Uinta Mountains indicated by paleocurrent data (Anderson and Picard, 1972). In Peterson's (1931c) paper, the name "Duchesne Formation" was applied to the formation and it was later changed to the "Duchesne River Formation" by Kay (1934). The formation is divided up into four members: the Brennan Basin, Dry Gulch Creek, LaPoint, and Starr Flat (Anderson and Picard, 1972). Debates concerning the Duchesne River Formation, as to whether its age was late Eocene or early Oligocene, have surfaced throughout the literature of the last century (Wood et al., 1941; Scott 1945). Recent paleo-magnetostratigraphic work (Prothero, 1996) shows that the Duchesne River Formation is late Eocene in time.

## FIELD METHODS

In order to determine if the proposed project area contained any paleontological resources, a reconnaissance survey was performed. An on-site observation of the proposed areas undergoing surficial disturbance is necessary because judgments made from topographic maps alone are often unreliable. Areas of low relief have potential to be erosional surfaces with the possibility of bearing fossil materials rather than surfaces covered by unconsolidated sediment or soils.

When found within the proposed construction areas, outcrops and erosional surfaces were checked to determine if fossils were present and to assess needs. Careful effort is made during surveys to identify and evaluate significant fossil materials or fossil horizons when they are found. Microvertebrates, although rare, are occasionally found in anthills or upon erosional surfaces and are of particular importance.

## PROJECT AREA

The project area is situated in the Wagonhound Member (Uinta A & B) of the Uinta Formation. The following list provides a description of the individual wells and their associated pipelines and access roads.

### **NBU #921-27, C2D, D2DS, D2AS, C2AS (Pad 57N)**

The proposed twin well pad upgrade and pipeline are located in the NE/NW quarter-quarter section of Sec. 27, T 9 S, R 21 E (Figure 1). The proposed twin well pad upgrade and pipeline are located on previously disturbed area and sandy colluvium derived from the underlying Wagonhound which outcrops on the west edge of the proposed well pad upgrade. The outcrops are on the surface and are gray-green, medium-grained, sandstone. No fossils were found.

### **NBU #1022-32, B3S, D4DS, D4AS, D1S**

The proposed twin well pad upgrade, pipeline re-route, and road re-route are located in the NE/NW quarter-quarter section of Sec. 32, T 10 S, R 22 E (Figure 2). The proposed well pad upgrade is located on an existing road. The proposed pipeline and road re-routes are go around the proposed well pad to the north. The proposed twin well pad upgrade, pipeline re-route, and road re-route are located on sandy colluvium in an area surrounded by 75 to 100 feet high hills with outcrops of tan and maroon sandstones and siltstones. Scattered, unidentifiable bone chips were found along the east end of the proposed pipeline and road re-routes but no other fossil were found.

## SURVEY RESULTS

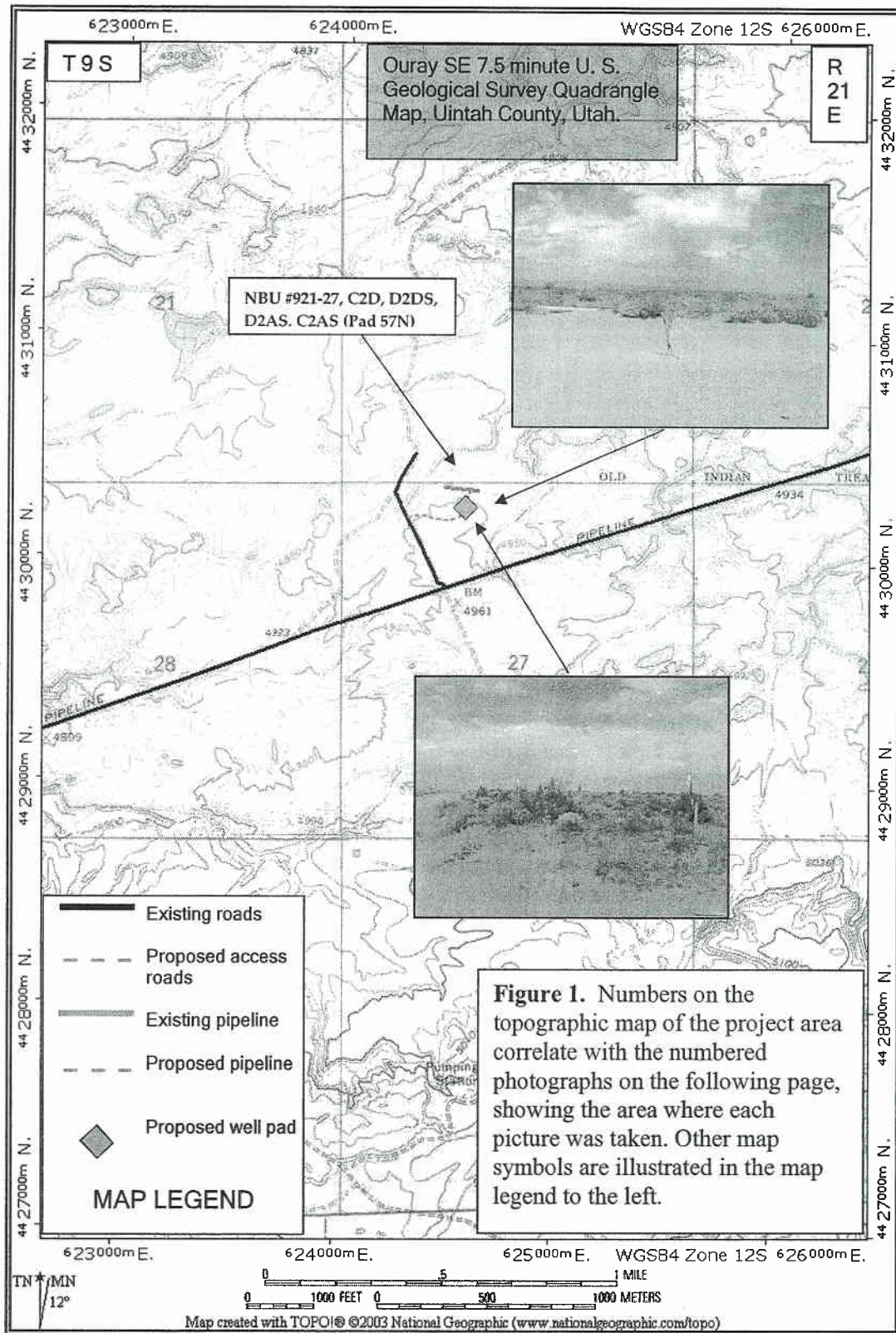
PROJECT	GEOLOGY	PALEONTOLOGY
<b>"NBU #921-27, C2D, D2DS, D2AS, C2AS (Pad 57N)"</b> (Sec. 27, T 9 S, R 21 E)	The proposed twin well pad upgrade and pipeline are located on previously disturbed area and sandy colluvium derived from the underlying Wagonhound which outcrops on the west edge of the proposed well pad upgrade. The outcrops are on the surface and are gray-green, medium-grained, sandstone.	No fossils were found. <b>Class 3a</b>
<b>"NBU #1022-32, B3S, D4DS, D4AS, D1S"</b> (Sec. 32, T 10 S, R 22 E)	The proposed twin well pad upgrade, pipeline re-route, and road re-route are located on sandy colluvium in an area surrounded by 75 to 100 feet high hills with outcrops of tan and maroon sandstones and siltstones.	Scattered, unidentifiable bone chips were found along the east end of the proposed pipeline and road re-routes but no other fossil were found. <b>Class 3a</b>

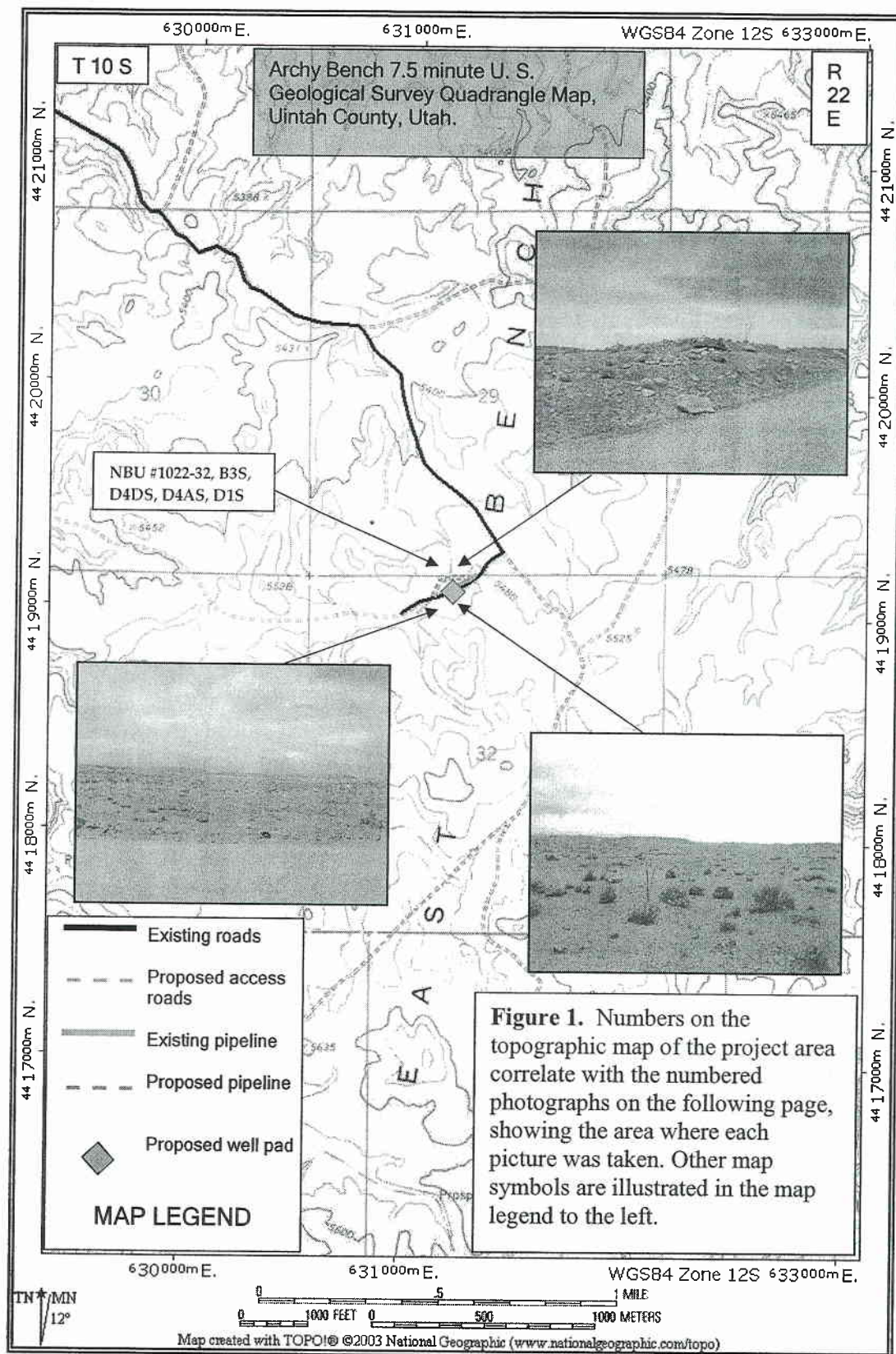
## RECOMMENDATIONS

A reconnaissance survey was conducted for Kerr McGee's proposed well pad, access road, and pipeline for "NBU #921-27, C2D, D2DS, D2AS, C2AS (Pad 57N)" (Sec. 27, T 9 S, R 21 E) & "NBU #1022-32, B3S, D4DS, D4AS, D1S" (Sec. 32, T 10 S, R 22 E). The well pads and the associated access roads and pipelines covered in this report showed no signs of vertebrate fossils. Therefore, we recommend that no paleontological restrictions should be placed on the development of the projects included in this report.

Buried pipeline will encounter Uinta formational sediments along most of the staked pipeline corridors yet indications from surface fossils predict that little if any vertebrate fossils will be disturbed.

Nevertheless, if any vertebrate fossil(s) are found during construction within the project area, Operator (Lease Holder) will report all occurrences of paleontological resources discovered to a geologist with the Office of the State Paleontologist. The operator is responsible for informing all persons in the areas who are associated with this project of the requirements for protecting paleontological resources. Paleontological resources found on the public lands are recognized by the State as constituting a fragile and nonrenewable scientific record of the history of life on earth, and so represent an important and critical component of America's natural heritage.





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**KERR-McGEE OIL & GAS ONSHORE LP**  
**DRILLING PROGRAM**

COMPANY NAME	KERR-McGEE OIL & GAS ONSHORE LP	DATE	July 2, 2008		
WELL NAME	<b>NBU 1022-32D4DS</b>	TD	8,500'	TVD	8,851' MD
FIELD	Natural Buttes	COUNTY	Uintah	STATE	Utah
		ELEVATION	5,449' GL	KB 5,464'	
SURFACE LOCATION	NENW 192' FNL & 2096' FWL, Sec. 32, T 10S R 22E				
	Latitude: 39.912181	Longitude: -109.464783	NAD 27		
BTM HOLE LOCATION	NWNW 1240' FNL & 1050' FWL, Sec. 32, T 10S R 22E				
	Latitude: 39.909303	Longitude: -109.468508	NAD 27		
OBJECTIVE ZONE(S)	Wasatch/Mesaverde				
ADDITIONAL INFO	Regulatory Agencies: UDOGM (MINERALS AND SURFACE), BLM, Tri-County Health Dept.				

GEOLOGICAL FORMATION			MECHANICAL		
LOGS	TOPS	DEPTH	HOLE SIZE	CASING SIZE	MUD WEIGHT
		20'		14"	
			12-1/4"	9-5/8", 36#, J-55, LTC	Air mist
Catch water sample, if possible, from 0 to 4,022'					
	Green River @	0,956'			
	Top of Birds Nest @	1,312'			
	Mahogany @	1,670'			
	Preset f/ GL @				
	1,800'	MD			
Note: 12.25" surface hole will usually be drilled ±400' below the lost circulation zone (aka bird's nest). Drilled depth may be ±200' of the estimated set depth depending on the actual depth of the loss zone.					
Mud logging program TBD Cased hole logging program f/ TD - surf csg			7-7/8"	4-1/2", 11.6#, 180 or equivalent LTC csg	Water/ Fresh Water Mud 8.3-11.6 ppg
	Wasatch @	4,022' TVD			
	Mverde @	6,469' TVD			
	MVU2 @	7,454' TVD			
	MVU1 @	8,076' TVD			
Max anticipated Mud required 11.2 ppg					
	TD @	8,500' TVD 8,851' MD			

### CASING PROGRAM

	SIZE	INTERVAL	WT.	GR.	CPLG.	DESIGN FACTORS		
						BURST	COLLAPSE	TENSION
CONDUCTOR	14"	0-40'				3520	2020	453000
SURFACE	9-5/8"	0 to 1800	36.00	J-55	LTC	1.14	2.40	8.90
						7780	6350	201000
PRODUCTION	4-1/2"	0 to 8500	11.60	I-80	LTC	2.53	1.28	2.24

- 1) Max Anticipated Surf. Press.(MASP) (Surface Casing) = (Pore Pressure at next csg point-(0.22 psi/ft-partial evac gradient x TVD of next csg point)
- 2) MASP (Prod Casing) = Pore Pressure at TD - (.22 psi/ft-partial evac gradient x TD)
- (Burst Assumptions: TD = 11.2 ppg) .22 psi/ft = gradient for partially evac wellbore
- (Collapse Assumption: Fully Evacuated Casing, Max MW) (Tension Assumptions: Air Weight of Casing\*Buoy.Fact. of water)
- MASP 3400 psi

### CEMENT PROGRAM

		FT. OF FILL	DESCRIPTION	SACKS	EXCESS	WEIGHT	YIELD
SURFACE Option 1	LEAD	500	Premium cmt + 2% CaCl + .25 pps flocele	215	60%	15.60	1.18
	TOP OUT CMT (1)	200	20 gals sodium silicate + Premium cmt + 2% CaCl + .25 pps flocele	50		15.60	1.18
	TOP OUT CMT (2)	as required	Premium cmt + 2% CaCl	as req.		15.60	1.18
SURFACE Option 2	LEAD	1500	<b>NOTE: If well will circulate water to surface, option 2 will be utilized</b>				
			65/35 Poz + 6% Gel + 10 pps gilsonite +.25 pps Flocele + 3% salt BWOW	360	35%	12.60	1.81
	TAIL	500	Premium cmt + 2% CaCl + .25 pps flocele	180	35%	15.60	1.18
	TOP OUT CMT	as required	Premium cmt + 2% CaCl	as req.		15.60	1.18
PRODUCTION	LEAD	3,521'	Premium Lite II + 3% KCl + 0.25 pps celloflake + 5 pps gilsonite + 10% gel + 0.5% extender	340	40%	11.00	3.38
	TAIL	5,330'	50/50 Poz/G + 10% salt + 2% gel +.1% R-3	1310	40%	14.30	1.31

\*Substitute caliper hole volume plus 0% excess for LEAD if accurate caliper is obtained

\*Substitute caliper hole volume plus 10% excess for TAIL if accurate caliper is obtained

### FLOAT EQUIPMENT & CENTRALIZERS

SURFACE	Guide shoe, 1 jt, insert float. Centralize first 3 joints with bow spring centralizers. Thread lock guide shoe.
PRODUCTION	Float shoe, 1 jt, float collar. Centralize first 3 joints & every third joint to top of tail cement with bow spring centralizers.

### ADDITIONAL INFORMATION

Test casing head to 750 psi after installing. Test surface casing to 1,500 psi prior to drilling out.

BOPE: 11" 5M with one annular and 2 rams. Test to 5,000 psi (annular to 2,500 psi) prior to drilling out. Record on chart recorder &

tour sheet. Function test rams on each trip. Maintain safety valve & inside BOP on rig floor at all times. Kelly to be equipped with upper & lower kelly valves.

Drop Totco surveys every 2000'. Maximum allowable hole angle is 5 degrees.

Most rigs have PVT System for mud monitoring. If no PVT is available, visual monitoring will be utilized.

DRILLING ENGINEER:

Brad Laney

DATE: \_\_\_\_\_

DRILLING SUPERINTENDENT:

Randy Bayne

DATE: \_\_\_\_\_

Kerr-McGee Oil & Gas Onshore LP  
NBU #1022-32B3S, #1022-32D4DS,  
#1022-32D4AS & #1022-32D1S  
SECTION 32, T10S, R22E, S.L.B.&M.

PROCEED IN A WESTERLY DIRECTION FROM VERNAL, UTAH ALONG U.S. HIGHWAY 40 APPROXIMATELY 14.0 MILES TO THE JUNCTION OF STATE HIGHWAY 88; EXIT LEFT AND PROCEED IN A SOUTHERLY DIRECTION APPROXIMATELY 17.0 MILES TO OURAY, UTAH; PROCEED IN A SOUTHERLY, THEN SOUTHEASTERLY DIRECTION APPROXIMATELY 11.2 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE EAST; TURN LEFT AND PROCEED IN AN EASTERLY, THEN SOUTHEASTERLY DIRECTION APPROXIMATELY 9.6 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE SOUTHEAST; TURN RIGHT AND PROCEED IN A SOUTHEASTERLY DIRECTION APPROXIMATELY 0.8 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE SOUTHWEST; TURN RIGHT AND PROCEED IN A SOUTHWESTERLY DIRECTION APPROXIMATELY 0.15 MILES TO THE PROPOSED LOCATION.

TOTAL DISTANCE FROM VERNAL, UTAH TO THE PROPOSED WELL LOCATION IS APPROXIMATELY 52.75 MILES.

# Kerr-McGee Oil & Gas Onshore LP

NBU #1022-32B3S, #1022-32D4DS,

#1022-32D4AS & #1022-32D1S

LOCATED IN UINTAH COUNTY, UTAH

SECTION 32, T10S, R22E, S.L.B.&M.



PHOTO: VIEW FROM CORNER #5 TO LOCATION STAKE

CAMERA ANGLE: NORTHWESTERLY



PHOTO: VIEW FROM BEGINNING OF PROPOSED ROAD RE-ROUTE

CAMERA ANGLE: NORTHWESTERLY



Uintah Engineering & Land Surveying  
85 South 200 East Vernal, Utah 84078  
435-789-1017 uels@uelsinc.com

LOCATION PHOTOS

06 04 08  
MONTH DAY YEAR

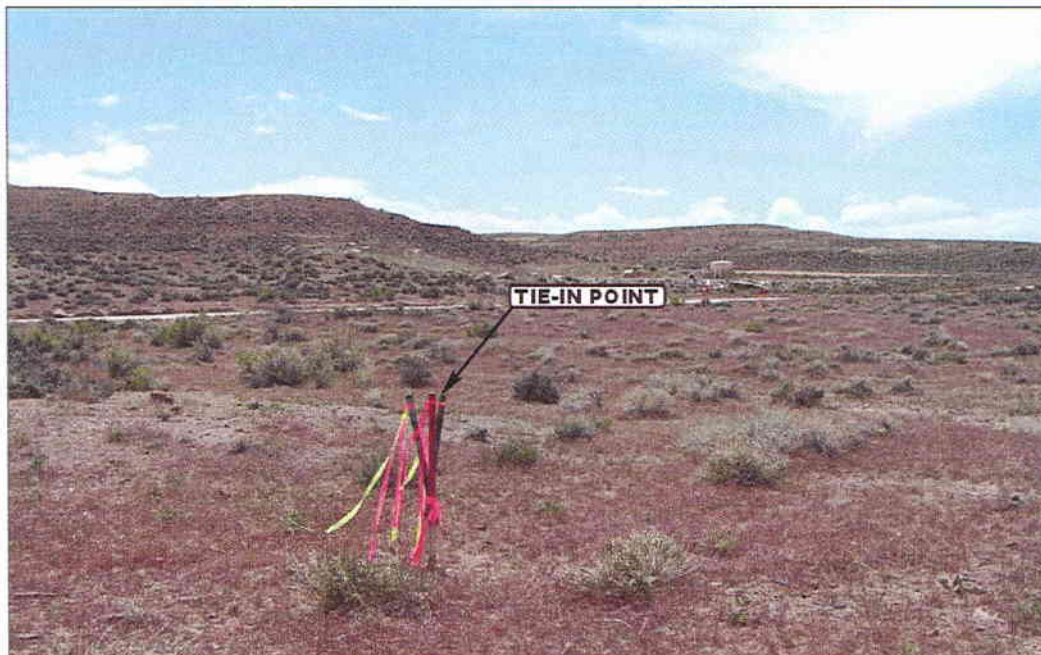
PHOTO

TAKEN BY: D.K. | DRAWN BY: Z.L. | REVISED: 00-00-00

# Kerr-McGee Oil & Gas Onshore LP

**NBU #1022-32B3S, #1022-32D4DS,  
#1022-32D4AS & #1022-32D1S**

**LOCATED IN UINTAH COUNTY, UTAH  
SECTION 32, T10S, R22E, S.L.B.&M.**



**PHOTO: VIEW OF TIE-IN POINT**

**CAMERA ANGLE: SOUTHWESTERLY**



- Since 1964 -



**Uintah Engineering & Land Surveying**

85 South 200 East Vernal, Utah 84078  
435-789-1017 uels@uelsinc.com

**PIPELINE PHOTOS**

**06 04 08**  
MONTH DAY YEAR

**PHOTO**

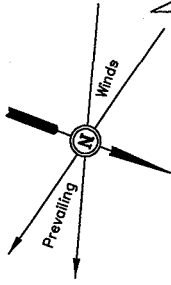
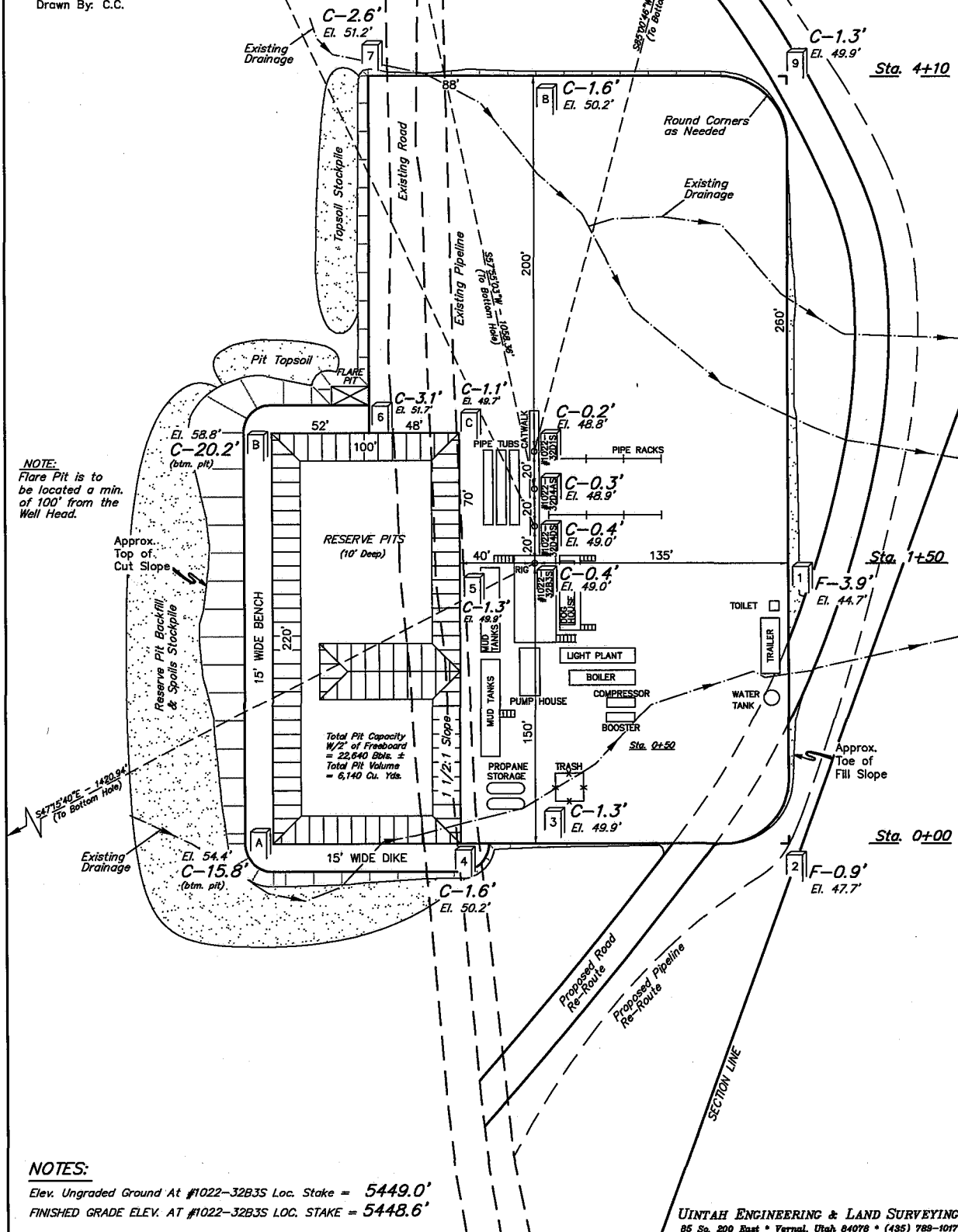
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DRAWN BY: Z.L.

REVISED: 00-00-00

## SITE PLAN LAYOUT FOR

**FIGURE #1**


$$-\frac{544.54 \times 10^6 \text{ N}}{(10 \text{ Bottom})} - \frac{1491.08}{\text{Hole}} -$$


**NOTES:**

Elev. Ungraded Ground At #1022-32B3S Loc. Stake = 5449.0'  
FINISHED GRADE ELEV. AT #1022-32B3S LOC. STAKE = 5448.6'

**UINTAH ENGINEERING & LAND SURVEYING**  
85 So. 200 East • Vernal, Utah 84078 • (435) 789-1017

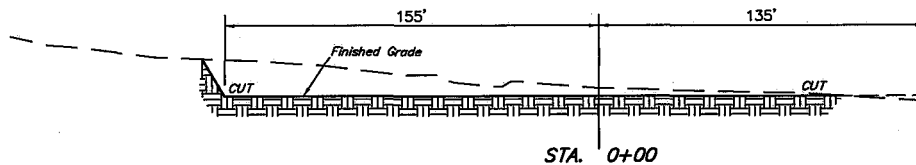
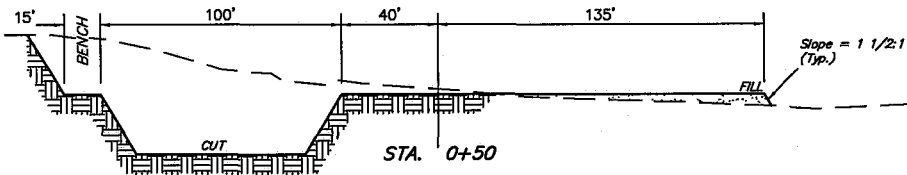
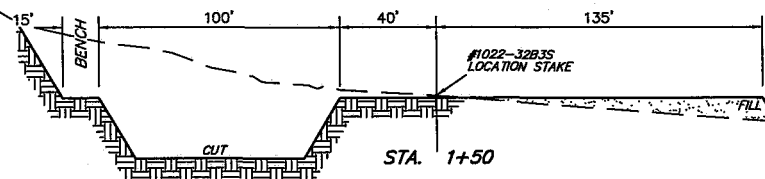
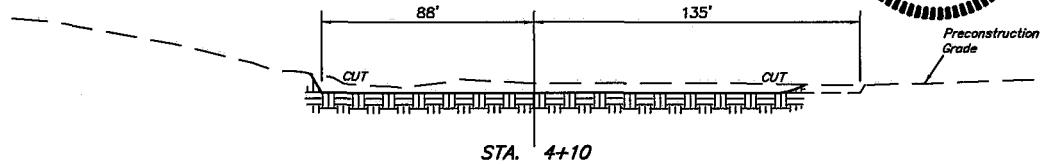
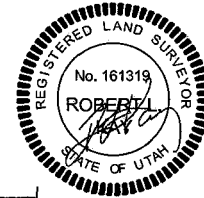
# Kerr-McGee Oil & Gas Onshore LP

## TYPICAL CROSS SECTIONS FOR

NBU #1022-32B3S, #1022-32D4DS,  
#1022-32D4AS & #1022-32D1S  
SECTION 32, T10S, R22E, S.L.B.&M.  
NE 1/4 NW 1/4

FIGURE #2

1" = 20'  
X-Section  
Scale  
1" = 50'  
DATE: 05-29-08  
Drawn By: C.C.



### NOTE:

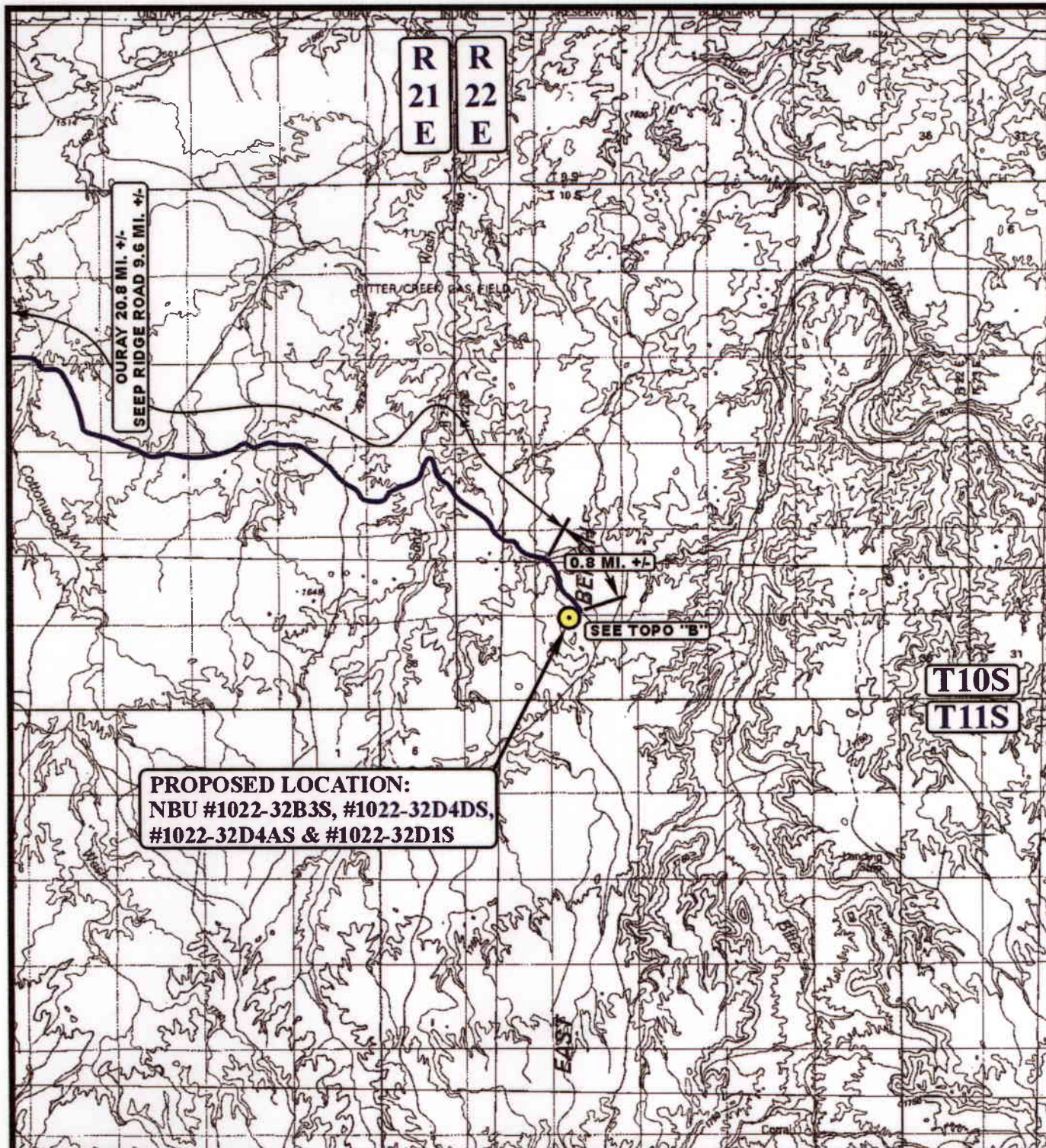
Topsoil should not be  
Stripped Below Finished  
Grade on Substructure Area.

\* NOTE:  
FILL QUANTITY INCLUDES  
5% FOR COMPACTION


### APPROXIMATE YARDAGES

CUT  
(6") Topsoil Stripping = 2,260 Cu. Yds.  
Remaining Location = 13,830 Cu. Yds.  
TOTAL CUT = 16,090 CU.YDS.  
FILL = 3,200 CU.YDS.

EXCESS MATERIAL = 12,890 Cu. Yds.  
Topsoil & Pit Backfill = 5,330 Cu. Yds.  
(1/2 Pit Vol.)  
EXCESS UNBALANCE = 7,560 Cu. Yds.  
(After Interim Rehabilitation)



# LEGEND:

 PROPOSED LOCATION



Uintah Engineering & Land Surveying  
 85 South 200 East Vernal, Utah 84078  
 (435) 789-1017 \* FAX (435) 789-1813



# Kerr-McGee Oil & Gas Onshore LP

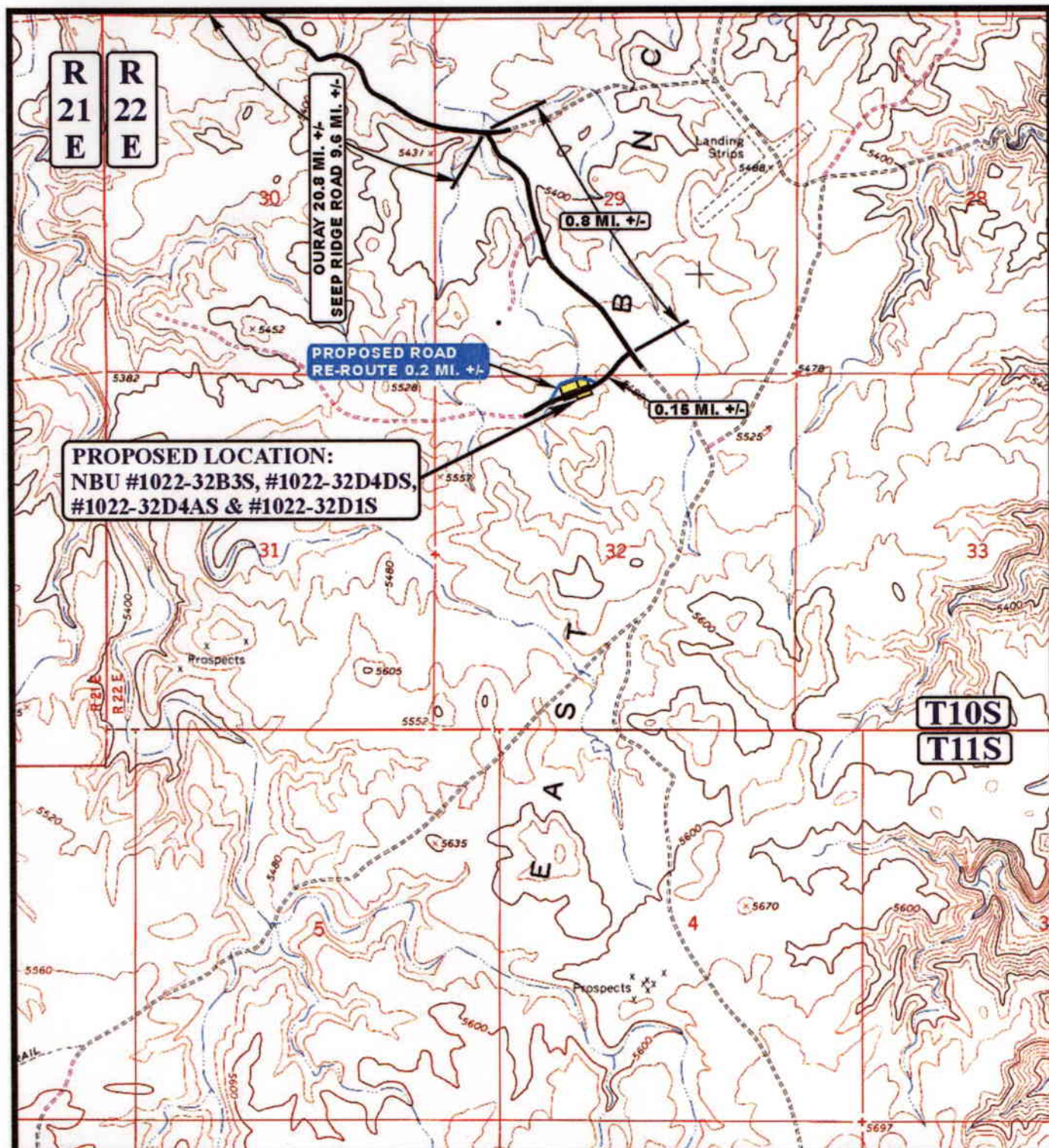
NBU #1022-32B3S, #1022-32D4DS,  
 #1022-32D4AS & #1022-32D1S  
 SECTION 32, T10S, R22E, S.L.B.&M.  
 NE 1/4 NW 1/4

TOPOGRAPHIC  
 MAP

06 04 08  
 MONTH DAY YEAR

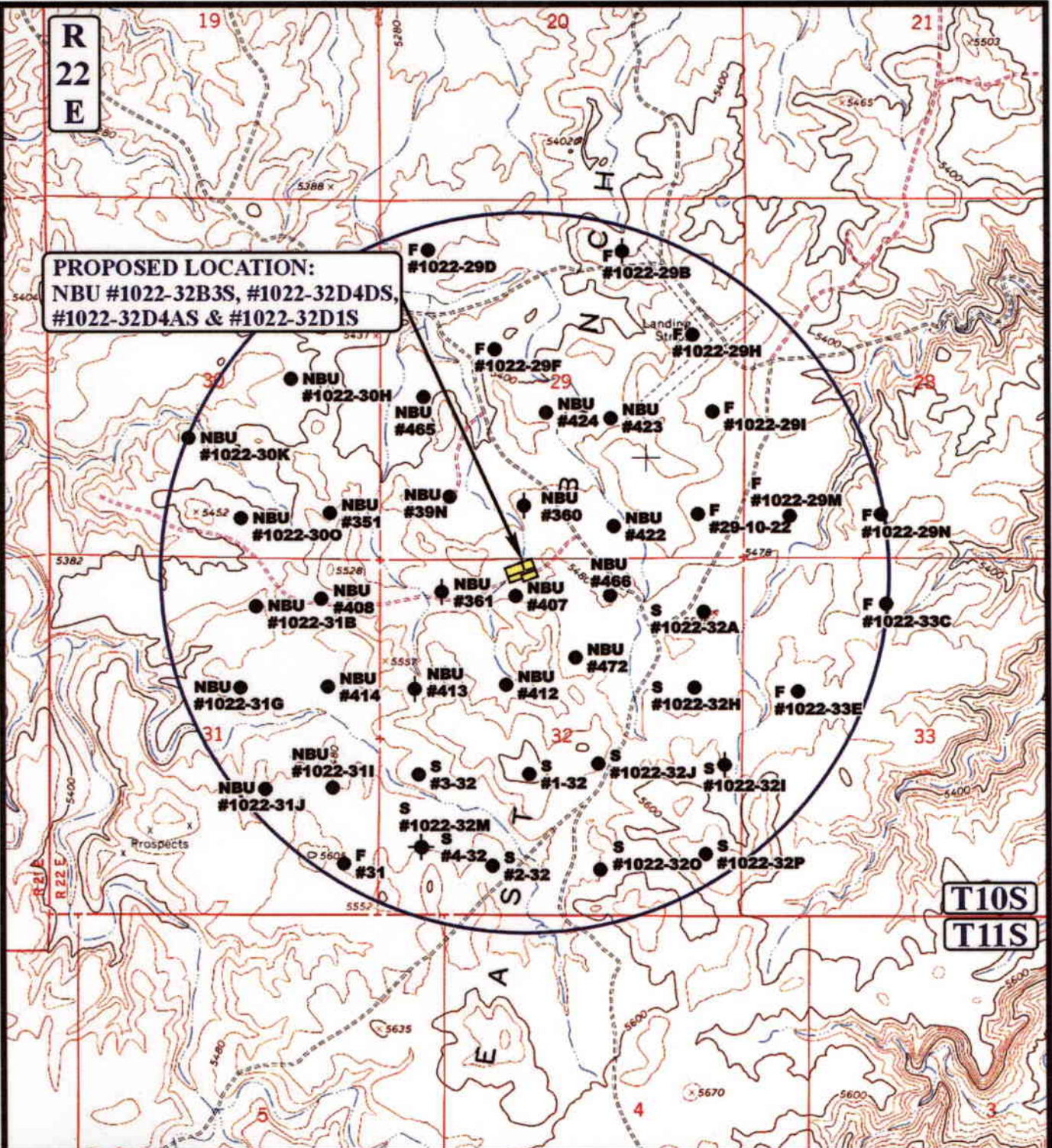
SCALE: 1:100,000 DRAWN BY: Z.L. REVISED: 00-00-00





R  
22  
E

PROPOSED LOCATION:  
NBU #1022-32B3S, #1022-32D4DS,  
#1022-32D4AS & #1022-32D1S



**LEGEND:**

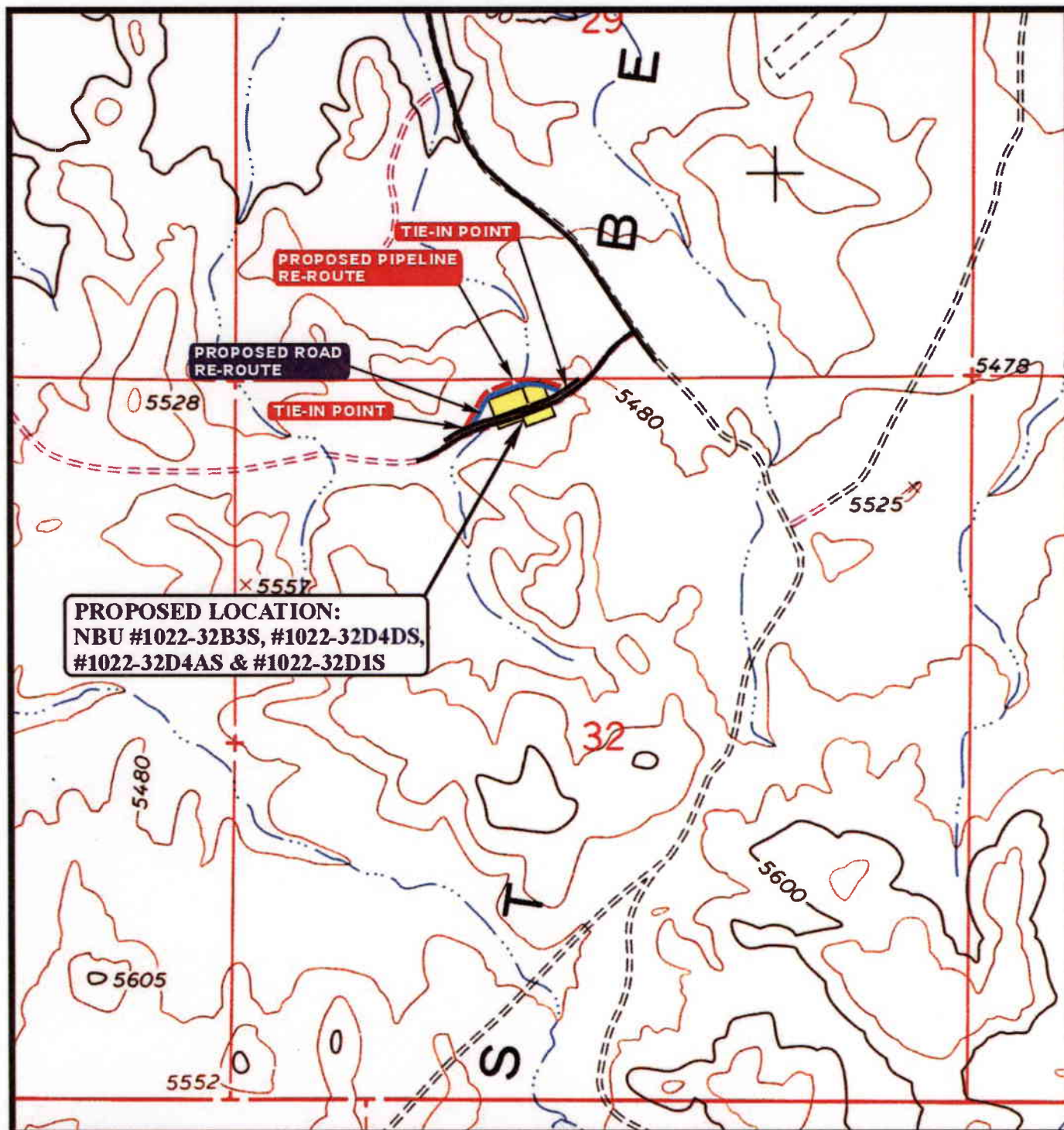
- |                 |                       |
|-----------------|-----------------------|
| DISPOSAL WELLS  | WATER WELLS           |
| PRODUCING WELLS | ABANDONED WELLS       |
| SHUT IN WELLS   | TEMPORARILY ABANDONED |

**Kerr-McGee Oil & Gas Onshore LP**

NBU #1022-32B3S, #1022-32D4DS,  
#1022-32D4AS & #1022-32D1S  
SECTION 32, T10S, R22E, S.L.B.&M.  
NE 1/4 NW 1/4

**U&L**  
Utah Engineering & Land Surveying  
85 South 200 East Vernal, Utah 84078  
(435) 789-1017 \* FAX (435) 789-1813

**TOPOGRAPHIC MAP**  
SCALE: 1" = 2000' DRAWN BY: Z.L. REVISED: 00-00-00  
**06 04 08**  
MONTH DAY YEAR  
**C**  
TOPO



**APPROXIMATE TOTAL PIPELINE RE-ROUTE DISTANCE = 1,019' +/-**

**LEGEND:**

- PROPOSED ACCESS ROAD
- EXISTING PIPELINE
- PROPOSED PIPELINE

**N**

**Kerr-McGee Oil & Gas Onshore LP**

NBU #1022-32B3S, #1022-32D4DS,  
 #1022-32D4AS & #1022-32D1S  
 SECTION 32, T10S, R22E, S.L.B.&M.  
 NE 1/4 NW 1/4



**Uintah Engineering & Land Surveying**  
 85 South 200 East Vernal, Utah 84078  
 (435) 789-1017 \* FAX (435) 789-1813

**TOPOGRAPHIC  
 MAP**

**06 04 08**  
 MONTH DAY YEAR

SCALE: 1" = 1000' DRAWN BY: Z.L. REVISED: 00-00-00

**D  
 TOPO**



**Weatherford®**

**Drilling Services**

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**Proposal**

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**Anadarko Petroleum Corp.**  
NBU 1022-32C PAD  
NBU 1022-32D4DS  
UINTAH COUNTY, UTAH  
WELL FILE: PLAN 1  
JUNE 27, 2008

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**Weatherford International Ltd.**  
2000 Oil Drive  
Casper, Wyoming 82604  
+1.307.265.1413 Main  
+1.307.235.3958 Fax  
[www.weatherford.com](http://www.weatherford.com)

### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1860.00	0.00	0.00	1860.00	0.00	0.00	0.00	0.00	0.00	
3	2860.16	30.00	224.92	2815.07	-181.24	-180.73	3.00	224.92	255.95	
4	4803.62	30.00	224.92	4498.07	-869.44	-866.96	0.00	0.00	1227.83	
5	5470.45	10.00	224.92	5121.50	-1030.14	-1027.20	3.00	180.00	1454.76	
	6803.78	0.00	0.00	5453.14	-1050.69	-1047.69	3.00	180.00	1483.78	
	7850.64	0.00	0.00	8500.00	-1050.69	-1047.69	0.00	0.00	1483.78	PBHL NBU 1022-32D4DS

### WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

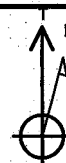
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape
PBHL NBU 1022-32D4DS	8500.00	-1047.85	-1044.91	580480.92	2569809.95	39° 54' 33.491 N	109° 28' 6.629 W	Circle (Radius: 25.00)



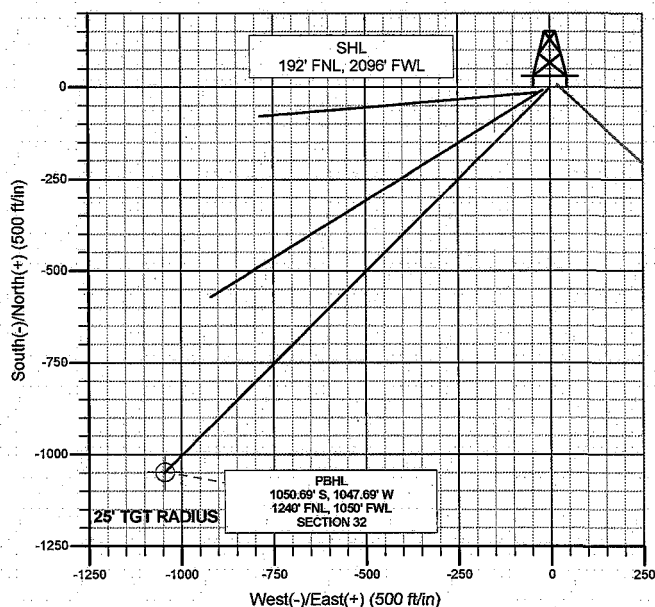
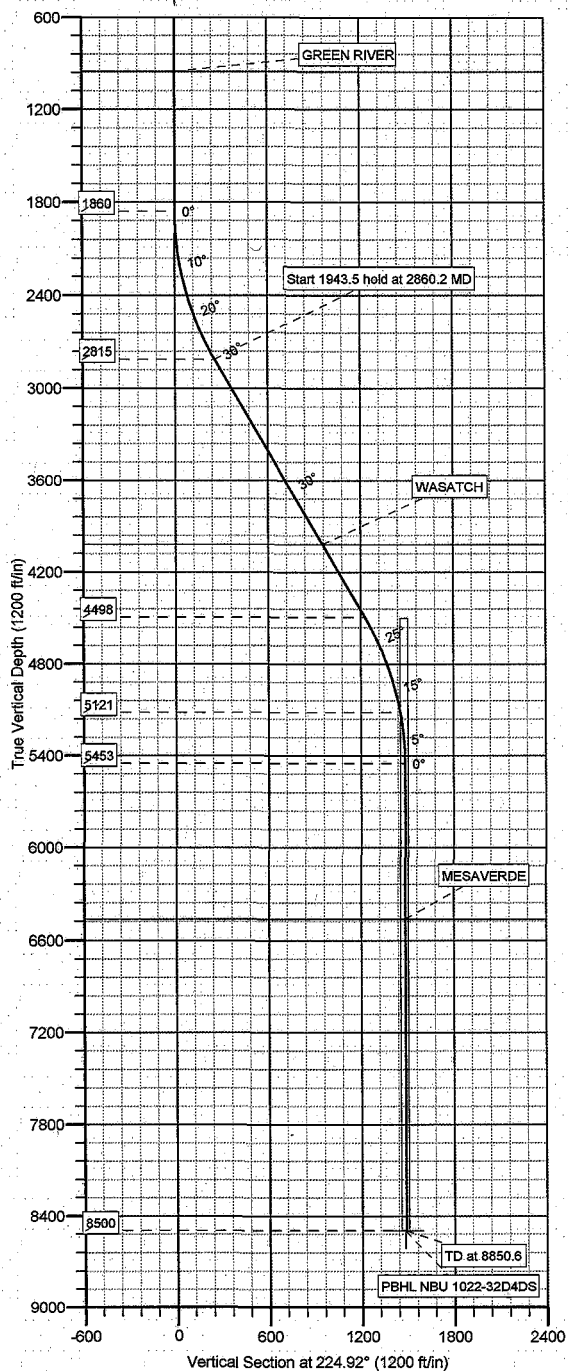
KB ELEV: WELL @ 5467.00ft (Original Well Elev)  
GR ELEV: 5449.00

### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
956.00	956.00	GREEN RIVER
4022.00	4253.87	WASATCH
6469.00	6819.64	MESAVERDE



Azimuths to True North  
Magnetic North: 11.45°  
Magnetic Field  
Strength: 52567.5nT  
Dip Angle: 65.86°  
Date: 6/27/2008  
Model: BGS2007



Plan: Design #1 (NBU 1022-32D4DS/NBU 1022-32D4DS)

Created By: TRACY WILLIAMS

Date: 14:16, June 27 2008



# **ANADARKO PETROLEUM CORP.**

**UINTAH COUNTY, UTAH (UTM Zone 12N-NAD 27)**

**ANADARKO 1022-32C PAD**

**NBU 1022-32D4DS**

**NBU 1022-32D4DS**

**Plan: Design #1**

## **Standard Planning Report**

**27 June, 2008**



**Weatherford®**

**Database:** EDM 2003.21 Single User Db  
**Company:** ANADARKO PETROLEUM CORP.  
**Project:** UINTAH COUNTY, UTAH (UTM Zone 12N-NAD 27)  
**Site:** ANADARKO 1022-32C PAD  
**Well:** NBU 1022-32D4DS  
**Wellbore:** NBU 1022-32D4DS  
**Design:** Design #1

**Local Co-ordinate Reference:** Well NBU 1022-32D4DS  
**TVD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**MD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

<b>Project</b>	UINTAH COUNTY, UTAH (UTM Zone 12N-NAD 27)		
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	Utah Central 4302		

Site		ANADARKO 1022-32C PAD			
Site Position:		Northing:	177,259.84 m	Latitude:	39° 54' 43.920 N
From:	Lat/Long	Easting:	783,596.38 m	Longitude:	109° 27' 52.981 W
Position Uncertainty:	0.0 ft	Slot Radius:	in	Grid Convergence:	1.30 °

Well	NBU 1022-32D4DS					
Well Position	+N/-S	-7.3 ft	Northing:	177,257.49 m	Latitude:	39° 54' 43.848 N
	+E/-W	-18.5 ft	Easting:	783,590.78 m	Longitude:	109° 27' 53.219 W
Position Uncertainty	0.0 ft		Wellhead Elevation:	5,449.0 ft	Ground Level:	5,449.0 ft

<b>Wellbore</b>	NBU 1022-32D4DS				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2007	6/27/2008	11.45	65.88	52,567

<b>Design</b>	Design #1				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE		<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	224.92	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,860.0	0.00	0.00	1,860.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,860.2	30.00	224.92	2,815.1	-181.2	-180.7	3.00	3.00	0.00	224.92	
4,803.6	30.00	224.92	4,498.1	-869.4	-867.0	0.00	0.00	0.00	0.00	
5,470.5	10.00	224.92	5,121.5	-1,030.1	-1,027.2	3.00	-3.00	0.00	180.00	
5,803.8	0.00	0.00	5,453.1	-1,050.7	-1,047.7	3.00	-3.00	0.00	180.00	
8,850.6	0.00	0.00	8,500.0	-1,050.7	-1,047.7	0.00	0.00	0.00	0.00	PBHL NBU 1022-3;

**Database:** EDM 2003.21 Single User Db  
**Company:** ANADARKO PETROLEUM CORP.  
**Project:** UTAH COUNTY, UTAH (UTM Zone 12N-NAD 27)  
**Site:** ANADARKO 1022-32C PAD  
**Well:** NBU 1022-32D4DS  
**Wellbore:** NBU 1022-32D4DS  
**Design:** Design #1

**Local Co-ordinate Reference:** Well NBU 1022-32D4DS  
**TVD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**MD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

**Planned Survey**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
956.0	0.00	0.00	956.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>GREEN RIVER</b>									
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,860.0	0.00	0.00	1,860.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>Start Build 3.00</b>									
1,900.0	1.20	224.92	1,900.0	-0.3	-0.3	0.4	3.00	3.00	0.00
2,000.0	4.20	224.92	1,999.9	-3.6	-3.6	5.1	3.00	3.00	0.00
2,100.0	7.20	224.92	2,099.4	-10.7	-10.6	15.1	3.00	3.00	0.00
2,200.0	10.20	224.92	2,198.2	-21.4	-21.3	30.2	3.00	3.00	0.00
2,300.0	13.20	224.92	2,296.1	-35.7	-35.6	50.5	3.00	3.00	0.00
2,400.0	16.20	224.92	2,392.8	-53.7	-53.5	75.8	3.00	3.00	0.00
2,500.0	19.20	224.92	2,488.1	-75.2	-75.0	106.2	3.00	3.00	0.00
2,600.0	22.20	224.92	2,581.6	-100.3	-100.0	141.6	3.00	3.00	0.00
2,700.0	25.20	224.92	2,673.2	-128.7	-128.3	181.8	3.00	3.00	0.00
2,800.0	28.20	224.92	2,762.5	-160.5	-160.1	226.7	3.00	3.00	0.00
2,860.2	30.00	224.92	2,815.1	-181.2	-180.7	256.0	3.00	3.00	0.00
<b>Start 1943.5 hold at 2860.2 MD</b>									
2,900.0	30.00	224.92	2,849.6	-195.4	-194.8	275.9	0.00	0.00	0.00
3,000.0	30.00	224.92	2,936.2	-230.8	-230.1	325.9	0.00	0.00	0.00
3,100.0	30.00	224.92	3,022.8	-266.2	-265.4	375.9	0.00	0.00	0.00
3,200.0	30.00	224.92	3,109.4	-301.6	-300.7	425.9	0.00	0.00	0.00
3,300.0	30.00	224.92	3,196.0	-337.0	-336.0	475.9	0.00	0.00	0.00
3,400.0	30.00	224.92	3,282.6	-372.4	-371.3	525.9	0.00	0.00	0.00
3,500.0	30.00	224.92	3,369.2	-407.8	-406.7	575.9	0.00	0.00	0.00
3,600.0	30.00	224.92	3,455.8	-443.2	-442.0	625.9	0.00	0.00	0.00
3,700.0	30.00	224.92	3,542.4	-478.6	-477.3	675.9	0.00	0.00	0.00
3,800.0	30.00	224.92	3,629.0	-514.1	-512.6	725.9	0.00	0.00	0.00
3,900.0	30.00	224.92	3,715.6	-549.5	-547.9	775.9	0.00	0.00	0.00
4,000.0	30.00	224.92	3,802.2	-584.9	-583.2	826.0	0.00	0.00	0.00
4,100.0	30.00	224.92	3,888.7	-620.3	-618.5	876.0	0.00	0.00	0.00
4,200.0	30.00	224.92	3,975.3	-655.7	-653.8	926.0	0.00	0.00	0.00
4,253.9	30.00	224.92	4,022.0	-674.8	-672.8	952.9	0.00	0.00	0.00
<b>WASATCH</b>									
4,300.0	30.00	224.92	4,061.9	-691.1	-689.1	976.0	0.00	0.00	0.00
4,400.0	30.00	224.92	4,148.5	-726.5	-724.4	1,026.0	0.00	0.00	0.00

**Database:** EDM 2003.21 Single User Db  
**Company:** ANADARKO PETROLEUM CORP.  
**Project:** UTAH COUNTY, UTAH (UTM Zone 12N-NAD 27)  
**Site:** ANADARKO 1022-32C PAD  
**Well:** NBU 1022-32D4DS  
**Wellbore:** NBU 1022-32D4DS  
**Design:** Design #1

**Local Co-ordinate Reference:** Well NBU 1022-32D4DS  
**TVD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**MD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,500.0	30.00	224.92	4,235.1	-761.9	-759.8	1,076.0	0.00	0.00	0.00
4,600.0	30.00	224.92	4,321.7	-797.3	-795.1	1,126.0	0.00	0.00	0.00
4,700.0	30.00	224.92	4,408.3	-832.7	-830.4	1,176.0	0.00	0.00	0.00
4,800.0	30.00	224.92	4,494.9	-868.2	-865.7	1,226.0	0.00	0.00	0.00
4,803.6	30.00	224.92	4,498.1	-869.4	-867.0	1,227.8	0.00	0.00	0.00
<b>Start DLS 3.00 TFO 180.00</b>									
4,900.0	27.11	224.92	4,582.7	-902.1	-899.5	1,273.9	3.00	-3.00	0.00
5,000.0	24.11	224.92	4,672.9	-932.7	-930.0	1,317.1	3.00	-3.00	0.00
5,100.0	21.11	224.92	4,765.2	-959.9	-957.2	1,355.6	3.00	-3.00	0.00
5,200.0	18.11	224.92	4,859.4	-983.7	-980.9	1,389.1	3.00	-3.00	0.00
5,300.0	15.11	224.92	4,955.2	-1,003.9	-1,001.0	1,417.7	3.00	-3.00	0.00
5,400.0	12.11	224.92	5,052.4	-1,020.6	-1,017.7	1,441.3	3.00	-3.00	0.00
5,470.5	10.00	224.92	5,121.5	-1,030.1	-1,027.2	1,454.8	3.00	-3.00	0.00
<b>Start Drop -3.00</b>									
5,500.0	9.11	224.92	5,150.6	-1,033.6	-1,030.7	1,459.7	3.00	-3.00	0.00
5,600.0	6.11	224.92	5,249.7	-1,043.0	-1,040.0	1,472.9	3.00	-3.00	0.00
5,700.0	3.11	224.92	5,349.4	-1,048.7	-1,045.7	1,481.0	3.00	-3.00	0.00
5,800.0	0.11	224.92	5,449.4	-1,050.7	-1,047.7	1,483.8	3.00	-3.00	0.00
5,803.8	0.00	0.00	5,453.1	-1,050.7	-1,047.7	1,483.8	3.00	-3.00	0.00
<b>Start 3046.9 hold at 5803.8 MD</b>									
5,900.0	0.00	0.00	5,549.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
6,000.0	0.00	0.00	5,649.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
6,100.0	0.00	0.00	5,749.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
6,200.0	0.00	0.00	5,849.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
6,300.0	0.00	0.00	5,949.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
6,400.0	0.00	0.00	6,049.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
6,500.0	0.00	0.00	6,149.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
6,600.0	0.00	0.00	6,249.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
6,700.0	0.00	0.00	6,349.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
6,800.0	0.00	0.00	6,449.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
6,819.6	0.00	0.00	6,469.0	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
<b>MESAVERDE</b>									
6,900.0	0.00	0.00	6,549.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
7,000.0	0.00	0.00	6,649.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
7,100.0	0.00	0.00	6,749.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
7,200.0	0.00	0.00	6,849.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
7,300.0	0.00	0.00	6,949.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
7,400.0	0.00	0.00	7,049.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
7,500.0	0.00	0.00	7,149.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
7,600.0	0.00	0.00	7,249.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
7,700.0	0.00	0.00	7,349.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
7,800.0	0.00	0.00	7,449.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
7,900.0	0.00	0.00	7,549.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
8,000.0	0.00	0.00	7,649.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
8,100.0	0.00	0.00	7,749.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
8,200.0	0.00	0.00	7,849.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
8,300.0	0.00	0.00	7,949.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
8,400.0	0.00	0.00	8,049.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
8,500.0	0.00	0.00	8,149.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
8,600.0	0.00	0.00	8,249.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
8,700.0	0.00	0.00	8,349.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00
8,800.0	0.00	0.00	8,449.4	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00



# **ANADARKO PETROLEUM CORP.**

**UINTAH COUNTY, UTAH (UTM Zone 12N-NAD 27)**

**ANADARKO 1022-32C PAD**

**NBU 1022-32D4DS**

**NBU 1022-32D4DS**

**Design #1**

## **Anticollision Report**

**27 June, 2008**



**Weatherford®**

**Company:** ANADARKO PETROLEUM CORP.  
**Project:** UINTAH COUNTY, UTAH (UTM Zone 12N-NAD 27)  
**Reference Site:** ANADARKO 1022-32C PAD  
**Site Error:** 0.0ft  
**Reference Well:** NBU 1022-32D4DS  
**Well Error:** 0.0ft  
**Reference Wellbore:** NBU 1022-32D4DS  
**Reference Design:** Design #1

**Local Co-ordinate Reference:** Well NBU 1022-32D4DS  
**TVD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**MD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** EDM 2003.21 Single User Db  
**Offset TVD Reference:** Offset Datum

<b>Reference</b>	Design #1
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria
<b>Interpolation Method:</b>	Stations
<b>Depth Range:</b>	Unlimited
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.0ft
<b>Warning Levels Evaluated at:</b>	2.00 Sigma
<b>Error Model:</b>	ISCWSA
<b>Scan Method:</b>	Closest Approach 3D
<b>Error Surface:</b>	Elliptical Conic

**Survey Tool Program**      **Date** 6/26/2008

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	8,850.6	Design #1 (NBU 1022-32D4DS)	MWD	MWD - Standard

#### Summary

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
ANADARKO 1022-32C PAD						
NBU 1022-32B3S - NBU 1022-32B3S - Design #1	1,860.0	1,860.0	19.9	11.8	2.461	CC, ES, SF
NBU 1022-32D1S - NBU 1022-32D1S - Design #1	2,078.4	2,074.6	39.5	30.6	4.440	CC
NBU 1022-32D1S - NBU 1022-32D1S - Design #1	2,100.0	2,095.7	39.5	30.5	4.406	ES
NBU 1022-32D1S - NBU 1022-32D1S - Design #1	2,200.0	2,193.5	41.1	31.7	4.392	SF
NBU 1022-32D4AS - NBU 1022-32D4AS - Design #1	1,860.0	1,860.0	20.1	12.0	2.487	CC
NBU 1022-32D4AS - NBU 1022-32D4AS - Design #1	2,000.0	1,998.6	20.5	11.9	2.380	ES
NBU 1022-32D4AS - NBU 1022-32D4AS - Design #1	2,100.0	2,097.5	21.3	12.3	2.379	SF

Offset Design ANADARKO 1022-32C PAD - NBU 1022-32B3S - NBU 1022-32B3S - Design #1													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	68.58	7.3	18.5	19.9					
100.0	100.0	100.0	100.0	0.1	0.1	68.58	7.3	18.5	19.9	19.7	0.18	108.083		
200.0	200.0	200.0	200.0	0.3	0.3	68.58	7.3	18.5	19.9	19.3	0.63	31.428		
300.0	300.0	300.0	300.0	0.5	0.5	68.58	7.3	18.5	19.9	18.8	1.08	18.388		
400.0	400.0	400.0	400.0	0.8	0.8	68.58	7.3	18.5	19.9	18.4	1.53	12.995		
500.0	500.0	500.0	500.0	1.0	1.0	68.58	7.3	18.5	19.9	17.9	1.98	10.049		
600.0	600.0	600.0	600.0	1.2	1.2	68.58	7.3	18.5	19.9	17.5	2.43	8.191		
700.0	700.0	700.0	700.0	1.4	1.4	68.58	7.3	18.5	19.9	17.0	2.88	6.913		
800.0	800.0	800.0	800.0	1.7	1.7	68.58	7.3	18.5	19.9	16.6	3.33	5.980		
900.0	900.0	900.0	900.0	1.9	1.9	68.58	7.3	18.5	19.9	16.1	3.78	5.269		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	68.58	7.3	18.5	19.9	15.7	4.23	4.709		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	68.58	7.3	18.5	19.9	15.2	4.68	4.257		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	68.58	7.3	18.5	19.9	14.8	5.13	3.884		
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	68.58	7.3	18.5	19.9	14.3	5.58	3.571		
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	68.58	7.3	18.5	19.9	13.9	6.03	3.305		
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	68.58	7.3	18.5	19.9	13.4	6.48	3.075		
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	68.58	7.3	18.5	19.9	13.0	6.93	2.876		
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	68.58	7.3	18.5	19.9	12.5	7.38	2.700		
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	68.58	7.3	18.5	19.9	12.1	7.83	2.545		
1,860.0	1,860.0	1,860.0	1,860.0	4.0	4.0	68.58	7.3	18.5	19.9	11.8	8.10	2.461	CC, ES, SF	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

**Company:** ANADARKO PETROLEUM CORP.  
**Project:** UINTAH COUNTY, UTAH (UTM Zone 12N-NAD 27)  
**Reference Site:** ANADARKO 1022-32C PAD  
**Site Error:** 0.0ft  
**Reference Well:** NBU 1022-32D4DS  
**Well Error:** 0.0ft  
**Reference Wellbore:** NBU 1022-32D4DS  
**Reference Design:** Design #1

**Local Co-ordinate Reference:** Well NBU 1022-32D4DS  
**TVD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**MD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** EDM 2003.21 Single User Db  
**Offset TVD Reference:** Offset Datum

Offset Design ANADARKO 1022-32C PAD - NBU 1022-32B3S - NBU 1022-32B3S - Design #1														Offset Site Error:	0.0ft
Survey Program: 0-MWD														Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)							
1,900.0	1,900.0	1,899.8	1,899.8	4.1	4.1	-155.76	7.0	18.8	20.5	12.2	8.25	2.482			
2,000.0	1,999.9	1,999.0	1,998.9	4.3	4.3	-150.89	3.8	22.3	27.0	18.4	8.60	3.135			
2,100.0	2,099.4	2,097.0	2,096.4	4.5	4.5	-145.70	-2.7	29.3	40.9	31.9	8.94	4.569			
2,200.0	2,198.2	2,193.1	2,191.4	4.7	4.7	-142.16	-12.4	39.8	62.2	52.9	9.30	6.684			
2,300.0	2,296.1	2,286.5	2,282.9	4.9	4.9	-139.85	-24.9	53.4	90.6	81.0	9.68	9.363			
2,400.0	2,392.8	2,376.6	2,370.4	5.2	5.2	-138.22	-39.8	69.6	125.9	115.8	10.09	12.478			
2,500.0	2,488.1	2,463.0	2,453.1	5.6	5.5	-136.93	-56.8	87.9	167.7	157.1	10.55	15.896			
2,600.0	2,581.6	2,545.3	2,530.7	6.1	5.9	-135.77	-75.2	107.9	215.5	204.4	11.06	19.487			
2,700.0	2,673.2	2,623.2	2,603.0	6.6	6.2	-134.63	-94.8	129.1	269.0	257.3	11.64	23.108			
2,800.0	2,762.5	2,700.0	2,673.2	7.3	6.7	-133.48	-116.0	152.1	327.7	315.4	12.30	26.644			
2,860.2	2,815.1	2,738.3	2,707.6	7.7	6.9	-132.70	-127.3	164.3	365.4	352.6	12.73	28.698			
2,900.0	2,849.6	2,765.2	2,731.7	8.0	7.1	-132.88	-135.5	173.2	391.0	378.0	13.06	29.943			
3,000.0	2,936.2	2,831.0	2,789.7	8.8	7.6	-133.03	-156.6	196.0	456.7	442.7	13.92	32.796			
3,100.0	3,022.8	2,900.5	2,850.0	9.7	8.2	-132.93	-180.0	221.4	523.7	508.8	14.87	35.221			
3,200.0	3,109.4	2,974.5	2,914.1	10.6	8.8	-132.82	-205.2	248.6	590.9	575.0	15.88	37.222			
3,300.0	3,196.0	3,048.6	2,978.2	11.5	9.5	-132.74	-230.3	275.8	658.1	641.2	16.92	38.908			
3,400.0	3,282.6	3,122.6	3,042.3	12.4	10.2	-132.67	-255.4	303.0	725.4	707.4	17.98	40.335			
3,500.0	3,369.2	3,196.6	3,106.5	13.4	10.9	-132.61	-280.5	330.2	792.6	773.5	19.08	41.547			
3,600.0	3,455.8	3,270.7	3,170.6	14.3	11.6	-132.56	-305.6	357.4	859.8	839.6	20.20	42.574			
3,700.0	3,542.4	3,344.7	3,234.7	15.3	12.3	-132.52	-330.7	384.6	927.0	905.7	21.33	43.460			
3,800.0	3,629.0	3,418.7	3,298.8	16.2	13.1	-132.48	-355.8	411.8	994.2	971.8	22.48	44.228			
3,900.0	3,715.6	3,492.8	3,362.9	17.2	13.8	-132.45	-380.9	439.0	1,061.4	1,037.8	23.64	44.894			
4,000.0	3,802.2	3,566.8	3,427.1	18.2	14.6	-132.43	-406.1	466.2	1,128.7	1,103.8	24.82	45.474			
4,100.0	3,888.7	3,640.9	3,491.2	19.2	15.3	-132.40	-431.2	493.4	1,195.9	1,169.9	26.01	45.986			
4,200.0	3,975.3	3,714.9	3,555.3	20.2	16.1	-132.38	-456.3	520.6	1,263.1	1,235.9	27.20	46.438			
4,300.0	4,061.9	3,788.9	3,619.4	21.1	16.9	-132.36	-481.4	547.8	1,330.3	1,301.9	28.40	46.839			
4,400.0	4,148.5	3,863.0	3,683.5	22.1	17.6	-132.34	-506.5	575.0	1,397.5	1,367.9	29.61	47.196			
4,500.0	4,235.1	3,937.0	3,747.6	23.1	18.4	-132.33	-531.6	602.2	1,464.8	1,433.9	30.83	47.516			
4,600.0	4,321.7	4,011.0	3,811.8	24.1	19.2	-132.31	-556.7	629.4	1,532.0	1,499.9	32.05	47.804			
4,700.0	4,408.3	4,085.1	3,875.9	25.1	19.9	-132.30	-581.8	656.6	1,599.2	1,565.9	33.27	48.063			
4,803.6	4,498.1	4,161.8	3,942.3	26.2	20.7	-132.28	-607.9	684.8	1,668.9	1,634.3	34.55	48.305			
4,900.0	4,582.7	4,234.2	4,005.0	27.0	21.5	-134.04	-632.4	711.4	1,732.4	1,696.5	35.88	48.277			
5,000.0	4,672.9	4,311.5	4,071.9	27.7	22.3	-135.54	-658.6	739.7	1,795.6	1,758.4	37.20	48.269			
5,100.0	4,765.2	4,390.7	4,140.5	28.3	23.2	-136.75	-685.5	768.8	1,855.9	1,817.4	38.51	48.197			
5,200.0	4,859.4	4,471.6	4,210.6	28.8	24.0	-137.70	-713.0	798.6	1,913.2	1,873.5	39.79	48.086			
5,300.0	4,955.2	4,554.0	4,282.0	29.3	24.9	-138.43	-740.9	828.8	1,967.4	1,926.4	41.03	47.956			
5,400.0	5,052.4	4,637.7	4,354.5	29.7	25.8	-138.97	-769.3	859.6	2,018.5	1,976.3	42.21	47.823			
5,470.5	5,121.5	4,728.0	4,432.9	29.9	26.7	-138.99	-799.7	892.5	2,052.4	2,009.2	43.19	47.518			
5,500.0	5,150.6	4,832.5	4,525.8	30.0	27.5	-138.52	-832.1	927.6	2,065.4	2,021.4	43.96	46.981			
5,600.0	5,249.7	5,229.7	4,899.1	30.3	29.8	-137.39	-922.7	1,025.7	2,098.7	2,052.5	46.16	45.469			
5,700.0	5,349.4	5,674.6	5,339.7	30.5	30.9	-137.28	-959.6	1,065.7	2,113.3	2,065.9	47.38	44.604			
5,803.8	5,453.1	5,788.1	5,453.1	30.6	31.0	87.53	-959.6	1,065.7	2,115.4	2,067.7	47.64	44.403			
5,900.0	5,549.4	5,884.3	5,549.4	30.7	31.1	87.53	-959.6	1,065.7	2,115.4	2,067.5	47.83	44.230			
6,000.0	5,649.4	5,984.3	5,649.4	30.7	31.2	87.53	-959.6	1,065.7	2,115.4	2,067.3	48.02	44.050			
6,100.0	5,749.4	6,084.3	5,749.4	30.8	31.3	87.53	-959.6	1,065.7	2,115.4	2,067.1	48.22	43.868			
6,200.0	5,849.4	6,184.3	5,849.4	30.9	31.4	87.53	-959.6	1,065.7	2,115.4	2,066.9	48.42	43.685			
6,300.0	5,949.4	6,284.3	5,949.4	31.0	31.4	87.53	-959.6	1,065.7	2,115.4	2,066.7	48.63	43.500			
6,400.0	6,049.4	6,384.3	6,049.4	31.1	31.5	87.53	-959.6	1,065.7	2,115.4	2,066.5	48.84	43.314			
6,500.0	6,149.4	6,484.3	6,149.4	31.2	31.6	87.53	-959.6	1,065.7	2,115.4	2,066.3	49.05	43.127			
6,600.0	6,249.4	6,584.3	6,249.4	31.2	31.7	87.53	-959.6	1,065.7	2,115.4	2,066.1	49.27	42.938			
6,700.0	6,349.4	6,684.3	6,349.4	31.3	31.8	87.53	-959.6	1,065.7	2,115.4	2,065.9	49.48	42.748			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

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**Reference Well:** NBU 1022-32D4DS  
**Well Error:** 0.0ft  
**Reference Wellbore:** NBU 1022-32D4DS  
**Reference Design:** Design #1

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**TVD Reference:** WELL @ 5467.0ft (Original Well Elev)  
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**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** EDM 2003.21 Single User Db  
**Offset TVD Reference:** Offset Datum

Offset Design ANADARKO 1022-32C PAD - NBU 1022-32B3S - NBU 1022-32B3S - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis Reference	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,800.0	6,449.4	6,784.3	6,449.4	31.4	31.9	87.53		-959.6	1,065.7	2,115.4	2,065.7	49.71	42.558	
6,900.0	6,549.4	6,884.3	6,549.4	31.5	32.0	87.53		-959.6	1,065.7	2,115.4	2,065.4	49.93	42.367	
7,000.0	6,649.4	6,984.3	6,649.4	31.6	32.1	87.53		-959.6	1,065.7	2,115.4	2,065.2	50.16	42.174	
7,100.0	6,749.4	7,084.3	6,749.4	31.7	32.2	87.53		-959.6	1,065.7	2,115.4	2,065.0	50.39	41.981	
7,200.0	6,849.4	7,184.3	6,849.4	31.8	32.3	87.53		-959.6	1,065.7	2,115.4	2,064.7	50.62	41.788	
7,300.0	6,949.4	7,284.3	6,949.4	31.9	32.4	87.53		-959.6	1,065.7	2,115.4	2,064.5	50.86	41.593	
7,400.0	7,049.4	7,384.3	7,049.4	32.0	32.5	87.53		-959.6	1,065.7	2,115.4	2,064.3	51.10	41.398	
7,500.0	7,149.4	7,484.3	7,149.4	32.1	32.6	87.53		-959.6	1,065.7	2,115.4	2,064.0	51.34	41.203	
7,600.0	7,249.4	7,584.3	7,249.4	32.2	32.7	87.53		-959.6	1,065.7	2,115.4	2,063.8	51.58	41.008	
7,700.0	7,349.4	7,684.3	7,349.4	32.3	32.8	87.53		-959.6	1,065.7	2,115.4	2,063.5	51.83	40.812	
7,800.0	7,449.4	7,784.3	7,449.4	32.4	32.9	87.53		-959.6	1,065.7	2,115.4	2,063.3	52.08	40.615	
7,900.0	7,549.4	7,884.3	7,549.4	32.5	33.0	87.53		-959.6	1,065.7	2,115.4	2,063.0	52.34	40.419	
8,000.0	7,649.4	7,984.3	7,649.4	32.6	33.1	87.53		-959.6	1,065.7	2,115.4	2,062.8	52.59	40.223	
8,100.0	7,749.4	8,084.3	7,749.4	32.7	33.2	87.53		-959.6	1,065.7	2,115.4	2,062.5	52.85	40.026	
8,200.0	7,849.4	8,184.3	7,849.4	32.8	33.3	87.53		-959.6	1,065.7	2,115.4	2,062.2	53.11	39.829	
8,300.0	7,949.4	8,284.3	7,949.4	32.9	33.4	87.53		-959.6	1,065.7	2,115.4	2,062.0	53.37	39.633	
8,400.0	8,049.4	8,384.3	8,049.4	33.0	33.5	87.53		-959.6	1,065.7	2,115.4	2,061.7	53.64	39.437	
8,500.0	8,149.4	8,484.3	8,149.4	33.2	33.6	87.53		-959.6	1,065.7	2,115.4	2,061.4	53.91	39.240	
8,600.0	8,249.4	8,584.3	8,249.4	33.3	33.8	87.53		-959.6	1,065.7	2,115.4	2,061.2	54.18	39.044	
8,700.0	8,349.4	8,684.3	8,349.4	33.4	33.9	87.53		-959.6	1,065.7	2,115.4	2,060.9	54.45	38.849	
8,800.0	8,449.4	8,784.3	8,449.4	33.5	34.0	87.53		-959.6	1,065.7	2,115.4	2,060.6	54.73	38.653	
8,850.6	8,500.0	8,834.9	8,500.0	33.6	34.0	87.53		-959.6	1,065.7	2,115.4	2,060.5	54.87	38.554	

**Company:** ANADARKO PETROLEUM CORP.  
**Project:** UINTAH COUNTY, UTAH (UTM Zone 12N-NAD 27)  
**Reference Site:** ANADARKO 1022-32C PAD  
**Site Error:** 0.0ft  
**Reference Well:** NBU 1022-32D4DS  
**Well Error:** 0.0ft  
**Reference Wellbore:** NBU 1022-32D4DS  
**Reference Design:** Design #1

**Local Co-ordinate Reference:** Well NBU 1022-32D4DS  
**TVD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**MD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** EDM 2003.21 Single User Db  
**Offset TVD Reference:** Offset Datum

Offset Design ANADARKO 1022-32C PAD - NBU 1022-32D1S - NBU 1022-32D1S - Design #1													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-111.19	-14.6	-37.6	40.3					
100.0	100.0	100.0	100.0	0.1	0.1	-111.19	-14.6	-37.6	40.3	40.1	0.18	218.537		
200.0	200.0	200.0	200.0	0.3	0.3	-111.19	-14.6	-37.6	40.3	39.6	0.63	63.546		
300.0	300.0	300.0	300.0	0.5	0.5	-111.19	-14.6	-37.6	40.3	39.2	1.08	37.179		
400.0	400.0	400.0	400.0	0.8	0.8	-111.19	-14.6	-37.6	40.3	38.7	1.53	26.276		
500.0	500.0	500.0	500.0	1.0	1.0	-111.19	-14.6	-37.6	40.3	38.3	1.98	20.318		
600.0	600.0	600.0	600.0	1.2	1.2	-111.19	-14.6	-37.6	40.3	37.8	2.43	16.562		
700.0	700.0	700.0	700.0	1.4	1.4	-111.19	-14.6	-37.6	40.3	37.4	2.88	13.978		
800.0	800.0	800.0	800.0	1.7	1.7	-111.19	-14.6	-37.6	40.3	36.9	3.33	12.092		
900.0	900.0	900.0	900.0	1.9	1.9	-111.19	-14.6	-37.6	40.3	36.5	3.78	10.654		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-111.19	-14.6	-37.6	40.3	36.0	4.23	9.522		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-111.19	-14.6	-37.6	40.3	35.6	4.68	8.607		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-111.19	-14.6	-37.6	40.3	35.1	5.13	7.853		
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-111.19	-14.6	-37.6	40.3	34.7	5.58	7.220		
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-111.19	-14.6	-37.6	40.3	34.3	6.03	6.682		
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	-111.19	-14.6	-37.6	40.3	33.8	6.48	6.218		
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-111.19	-14.6	-37.6	40.3	33.4	6.93	5.814		
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-111.19	-14.6	-37.6	40.3	32.9	7.38	5.460		
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-111.19	-14.6	-37.6	40.3	32.5	7.83	5.146		
1,860.0	1,860.0	1,860.0	1,860.0	4.0	4.0	-111.19	-14.6	-37.6	40.3	32.2	8.10	4.975		
1,900.0	1,900.0	1,899.3	1,899.3	4.1	4.1	24.27	-14.6	-37.9	40.2	32.0	8.26	4.872		
2,000.0	1,999.9	1,997.6	1,997.5	4.3	4.3	28.52	-14.9	-41.7	39.8	31.1	8.61	4.616		
2,078.4	2,077.9	2,074.6	2,074.3	4.5	4.5	35.27	-15.4	-47.6	39.5	30.6	8.89	4.440 CC		
2,100.0	2,099.4	2,095.7	2,095.3	4.5	4.5	37.65	-15.6	-49.6	39.5	30.5	8.97	4.406 ES		
2,200.0	2,198.2	2,193.5	2,192.4	4.7	4.7	51.09	-16.6	-61.7	41.1	31.7	9.35	4.392 SF		
2,300.0	2,296.1	2,290.9	2,288.4	4.9	5.0	66.38	-18.0	-77.8	46.4	36.6	9.82	4.723		
2,400.0	2,392.8	2,387.8	2,383.2	5.2	5.3	80.13	-19.7	-97.8	56.7	46.3	10.40	5.445		
2,500.0	2,488.1	2,484.1	2,476.4	5.6	5.6	90.62	-21.8	-121.7	71.9	60.8	11.09	6.486		
2,600.0	2,581.6	2,579.6	2,567.8	6.1	5.9	98.04	-24.1	-149.2	91.7	79.8	11.88	7.721		
2,700.0	2,673.2	2,674.3	2,657.3	6.6	6.4	103.16	-26.8	-180.2	115.5	102.7	12.78	9.033		
2,800.0	2,762.5	2,768.1	2,744.5	7.3	6.9	106.70	-29.7	-214.5	142.8	129.0	13.82	10.334		
2,860.2	2,815.1	2,824.1	2,795.9	7.7	7.2	108.28	-31.6	-236.6	160.9	146.4	14.51	11.089		
2,900.0	2,849.6	2,861.4	2,829.9	8.0	7.5	109.43	-32.9	-252.0	173.3	158.3	15.00	11.553		
3,000.0	2,936.2	2,956.0	2,915.9	8.8	8.1	111.67	-36.3	-291.2	204.8	188.5	16.31	12.558		
3,100.0	3,022.8	3,050.7	3,002.0	9.7	8.8	113.32	-39.7	-330.4	236.6	218.9	17.68	13.379		
3,200.0	3,109.4	3,145.3	3,088.1	10.6	9.5	114.57	-43.0	-369.6	268.4	249.3	19.10	14.052		
3,300.0	3,196.0	3,240.0	3,174.2	11.5	10.2	115.56	-46.4	-408.8	300.4	279.8	20.56	14.607		
3,400.0	3,282.6	3,334.6	3,260.2	12.4	11.0	116.36	-49.8	-448.0	332.4	310.3	22.06	15.069		
3,500.0	3,369.2	3,429.2	3,346.3	13.4	11.7	117.02	-53.1	-487.2	364.5	340.9	23.58	15.458		
3,600.0	3,455.8	3,523.9	3,432.4	14.3	12.5	117.57	-56.5	-526.4	396.6	371.4	25.12	15.788		
3,700.0	3,542.4	3,618.5	3,518.5	15.3	13.3	118.04	-59.8	-565.6	428.7	402.0	26.67	16.071		
3,800.0	3,629.0	3,714.8	3,606.4	16.2	14.0	118.57	-63.2	-604.7	460.7	432.6	28.17	16.354		
3,900.0	3,715.6	3,811.8	3,696.5	17.2	14.6	119.51	-66.3	-640.5	492.4	462.9	29.51	16.682		
4,000.0	3,802.2	3,908.3	3,787.5	18.2	15.2	120.78	-69.0	-672.3	523.7	493.0	30.76	17.026		
4,100.0	3,888.7	4,004.0	3,879.1	19.2	15.6	122.34	-71.4	-700.0	555.0	523.1	31.90	17.401		
4,200.0	3,975.3	4,098.6	3,970.6	20.2	16.1	124.11	-73.4	-723.7	586.5	553.6	32.91	17.819		
4,300.0	4,061.9	4,191.7	4,061.7	21.1	16.4	126.05	-75.1	-743.3	618.4	584.6	33.80	18.294		
4,400.0	4,148.5	4,283.2	4,151.8	22.1	16.7	128.11	-76.4	-758.9	651.0	616.5	34.56	18.835		
4,500.0	4,235.1	4,372.8	4,240.6	23.1	17.0	130.25	-77.4	-770.7	684.6	649.4	35.20	19.451		
4,600.0	4,321.7	4,460.2	4,327.6	24.1	17.2	132.43	-78.1	-778.9	719.4	683.7	35.71	20.146		
4,700.0	4,408.3	4,545.3	4,412.6	25.1	17.3	134.63	-78.5	-783.7	755.7	719.6	36.11	20.927		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

**Company:** ANADARKO PETROLEUM CORP.  
**Project:** UINTAH COUNTY, UTAH (UTM Zone 12N-NAD 27)  
**Reference Site:** ANADARKO 1022-32C PAD  
**Site Error:** 0.0ft  
**Reference Well:** NBU 1022-32D4DS  
**Well Error:** 0.0ft  
**Reference Wellbore:** NBU 1022-32D4DS  
**Reference Design:** Design #1

**Local Co-ordinate Reference:** Well NBU 1022-32D4DS  
**TVD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**MD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** EDM 2003.21 Single User Db  
**Offset TVD Reference:** Offset Datum

Offset Design ANADARKO 1022-32C PAD - NBU 1022-32D1S - NBU 1022-32D1S - Design #1												Offset Site Error:	0.0ft
Survey Program: 0-MWD												Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,803.6	4,498.1	4,630.9	4,498.2	26.2	17.4	136.89	-78.7	-785.4	795.0	758.5	36.42	21.827	
4,900.0	4,582.7	4,715.5	4,582.7	27.0	17.5	139.72	-78.7	-785.4	831.3	794.7	36.58	22.727	
5,000.0	4,672.9	4,805.6	4,672.9	27.7	17.7	142.19	-78.7	-785.4	866.1	829.5	36.69	23.604	
5,100.0	4,765.2	4,897.9	4,765.2	28.3	17.8	144.24	-78.7	-785.4	897.8	861.0	36.84	24.373	
5,200.0	4,859.4	4,992.1	4,859.4	28.8	17.9	145.93	-78.7	-785.4	925.8	888.9	36.99	25.030	
5,300.0	4,955.2	5,087.9	4,955.2	29.3	18.0	147.29	-78.7	-785.4	950.0	912.9	37.15	25.572	
5,400.0	5,052.4	5,185.1	5,052.4	29.7	18.1	148.36	-78.7	-785.4	970.1	932.8	37.31	26.001	
5,470.5	5,121.5	5,254.3	5,121.5	29.9	18.2	148.95	-78.7	-785.4	981.7	944.3	37.42	26.236	
5,500.0	5,150.6	5,283.4	5,150.6	30.0	18.3	149.16	-78.7	-785.4	985.9	948.5	37.46	26.318	
5,600.0	5,249.7	5,382.5	5,249.7	30.3	18.4	149.73	-78.7	-785.4	997.4	959.8	37.60	26.525	
5,700.0	5,349.4	5,482.2	5,349.4	30.5	18.5	150.06	-78.7	-785.4	1,004.3	966.6	37.72	26.623	
5,803.8	5,453.1	5,585.9	5,453.1	30.6	18.7	15.10	-78.7	-785.4	1,006.8	968.9	37.84	26.609	
5,900.0	5,549.4	5,682.1	5,549.4	30.7	18.8	15.10	-78.7	-785.4	1,006.8	968.7	38.08	26.435	
6,000.0	5,649.4	5,782.1	5,649.4	30.7	19.0	15.10	-78.7	-785.4	1,006.8	968.4	38.35	26.251	
6,100.0	5,749.4	5,882.1	5,749.4	30.8	19.1	15.10	-78.7	-785.4	1,006.8	968.1	38.62	26.067	
6,200.0	5,849.4	5,982.1	5,849.4	30.9	19.2	15.10	-78.7	-785.4	1,006.8	967.9	38.90	25.884	
6,300.0	5,949.4	6,082.1	5,949.4	31.0	19.4	15.10	-78.7	-785.4	1,006.8	967.6	39.17	25.701	
6,400.0	6,049.4	6,182.1	6,049.4	31.1	19.5	15.10	-78.7	-785.4	1,006.8	967.3	39.45	25.518	
6,500.0	6,149.4	6,282.1	6,149.4	31.2	19.7	15.10	-78.7	-785.4	1,006.8	967.0	39.74	25.336	
6,600.0	6,249.4	6,382.1	6,249.4	31.2	19.8	15.10	-78.7	-785.4	1,006.8	966.7	40.02	25.155	
6,700.0	6,349.4	6,482.1	6,349.4	31.3	20.0	15.10	-78.7	-785.4	1,006.8	966.5	40.31	24.975	
6,800.0	6,449.4	6,582.1	6,449.4	31.4	20.1	15.10	-78.7	-785.4	1,006.8	966.2	40.60	24.795	
6,900.0	6,549.4	6,682.1	6,549.4	31.5	20.3	15.10	-78.7	-785.4	1,006.8	965.9	40.90	24.616	
7,000.0	6,649.4	6,782.1	6,649.4	31.6	20.4	15.10	-78.7	-785.4	1,006.8	965.6	41.20	24.438	
7,100.0	6,749.4	6,882.1	6,749.4	31.7	20.6	15.10	-78.7	-785.4	1,006.8	965.3	41.50	24.261	
7,200.0	6,849.4	6,982.1	6,849.4	31.8	20.8	15.10	-78.7	-785.4	1,006.8	965.0	41.80	24.085	
7,300.0	6,949.4	7,082.1	6,949.4	31.9	20.9	15.10	-78.7	-785.4	1,006.8	964.7	42.11	23.911	
7,400.0	7,049.4	7,182.1	7,049.4	32.0	21.1	15.10	-78.7	-785.4	1,006.8	964.4	42.41	23.737	
7,500.0	7,149.4	7,282.1	7,149.4	32.1	21.2	15.10	-78.7	-785.4	1,006.8	964.0	42.72	23.564	
7,600.0	7,249.4	7,382.1	7,249.4	32.2	21.4	15.10	-78.7	-785.4	1,006.8	963.7	43.04	23.393	
7,700.0	7,349.4	7,482.1	7,349.4	32.3	21.6	15.10	-78.7	-785.4	1,006.8	963.4	43.35	23.222	
7,800.0	7,449.4	7,582.1	7,449.4	32.4	21.7	15.10	-78.7	-785.4	1,006.8	963.1	43.67	23.053	
7,900.0	7,549.4	7,682.1	7,549.4	32.5	21.9	15.10	-78.7	-785.4	1,006.8	962.8	43.99	22.886	
8,000.0	7,649.4	7,782.1	7,649.4	32.6	22.1	15.10	-78.7	-785.4	1,006.8	962.5	44.31	22.719	
8,100.0	7,749.4	7,882.1	7,749.4	32.7	22.2	15.10	-78.7	-785.4	1,006.8	962.1	44.64	22.554	
8,200.0	7,849.4	7,982.1	7,849.4	32.8	22.4	15.10	-78.7	-785.4	1,006.8	961.8	44.97	22.390	
8,300.0	7,949.4	8,082.1	7,949.4	32.9	22.6	15.10	-78.7	-785.4	1,006.8	961.5	45.29	22.227	
8,400.0	8,049.4	8,182.1	8,049.4	33.0	22.7	15.10	-78.7	-785.4	1,006.8	961.1	45.62	22.066	
8,500.0	8,149.4	8,282.1	8,149.4	33.2	22.9	15.10	-78.7	-785.4	1,006.8	960.8	45.96	21.906	
8,600.0	8,249.4	8,382.1	8,249.4	33.3	23.1	15.10	-78.7	-785.4	1,006.8	960.5	46.29	21.748	
8,700.0	8,349.4	8,482.1	8,349.4	33.4	23.3	15.10	-78.7	-785.4	1,006.8	960.1	46.63	21.591	
8,800.0	8,449.4	8,582.1	8,449.4	33.5	23.4	15.10	-78.7	-785.4	1,006.8	959.8	46.97	21.435	
8,850.6	8,500.0	8,632.8	8,500.0	33.6	23.5	15.10	-78.7	-785.4	1,006.8	959.6	47.14	21.357	

**Company:** ANADARKO PETROLEUM CORP.  
**Project:** UINTAH COUNTY, UTAH (UTM Zone 12N-NAD 27)  
**Reference Site:** ANADARKO 1022-32C PAD  
**Site Error:** 0.0ft  
**Reference Well:** NBU 1022-32D4DS  
**Well Error:** 0.0ft  
**Reference Wellbore:** NBU 1022-32D4DS  
**Reference Design:** Design #1

**Local Co-ordinate Reference:** Well NBU 1022-32D4DS  
**TVD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**MD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** EDM 2003.21 Single User Db  
**Offset TVD Reference:** Offset Datum

Offset Design ANADARKO 1022-32C PAD - NBU 1022-32D4AS - NBU 1022-32D4AS - Design #1													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
Reference	Offset	Semi Major Axis		Distance		Minimum		Separation		Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-111.17	-7.3	-18.8	20.1					
100.0	100.0	100.0	100.0	0.1	0.1	-111.17	-7.3	-18.8	20.1	20.0	0.18	109.256		
200.0	200.0	200.0	200.0	0.3	0.3	-111.17	-7.3	-18.8	20.1	19.5	0.63	31.769		
300.0	300.0	300.0	300.0	0.5	0.5	-111.17	-7.3	-18.8	20.1	19.1	1.08	18.587		
400.0	400.0	400.0	400.0	0.8	0.8	-111.17	-7.3	-18.8	20.1	18.6	1.53	13.136		
500.0	500.0	500.0	500.0	1.0	1.0	-111.17	-7.3	-18.8	20.1	18.2	1.98	10.158		
600.0	600.0	600.0	600.0	1.2	1.2	-111.17	-7.3	-18.8	20.1	17.7	2.43	8.280		
700.0	700.0	700.0	700.0	1.4	1.4	-111.17	-7.3	-18.8	20.1	17.3	2.88	6.988		
800.0	800.0	800.0	800.0	1.7	1.7	-111.17	-7.3	-18.8	20.1	16.8	3.33	6.045		
900.0	900.0	900.0	900.0	1.9	1.9	-111.17	-7.3	-18.8	20.1	16.4	3.78	5.326		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-111.17	-7.3	-18.8	20.1	15.9	4.23	4.760		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-111.17	-7.3	-18.8	20.1	15.5	4.68	4.303		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-111.17	-7.3	-18.8	20.1	15.0	5.13	3.926		
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-111.17	-7.3	-18.8	20.1	14.6	5.58	3.610		
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-111.17	-7.3	-18.8	20.1	14.1	6.03	3.340		
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	-111.17	-7.3	-18.8	20.1	13.7	6.48	3.109		
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-111.17	-7.3	-18.8	20.1	13.2	6.93	2.907		
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-111.17	-7.3	-18.8	20.1	12.8	7.38	2.730		
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-111.17	-7.3	-18.8	20.1	12.3	7.83	2.573		
1,860.0	1,860.0	1,860.0	1,860.0	4.0	4.0	-111.17	-7.3	-18.8	20.1	12.0	8.10	2.487 CC		
1,900.0	1,900.0	1,899.6	1,899.6	4.1	4.1	24.17	-7.5	-19.1	20.2	11.9	8.25	2.442		
2,000.0	1,999.9	1,998.6	1,998.4	4.3	4.3	27.02	-9.9	-23.0	20.5	11.9	8.60	2.380 ES		
2,100.0	2,099.4	2,097.5	2,096.9	4.5	4.5	32.71	-15.1	-31.3	21.3	12.3	8.94	2.379 SF		
2,200.0	2,198.2	2,196.4	2,194.7	4.7	4.7	40.49	-22.9	-43.8	22.8	13.5	9.30	2.457		
2,300.0	2,296.1	2,295.2	2,291.5	4.9	5.0	49.15	-33.5	-60.6	25.5	15.8	9.72	2.627		
2,400.0	2,392.8	2,394.0	2,387.1	5.2	5.3	57.52	-46.6	-81.6	29.5	19.3	10.26	2.881		
2,500.0	2,488.1	2,492.7	2,481.2	5.6	5.6	64.79	-62.4	-106.8	35.0	24.0	10.96	3.193		
2,600.0	2,581.6	2,591.2	2,573.5	6.1	6.1	70.73	-80.6	-136.0	41.8	30.0	11.85	3.530		
2,700.0	2,673.2	2,689.7	2,663.9	6.6	6.6	75.41	-101.4	-169.2	50.0	37.0	12.95	3.861		
2,800.0	2,762.5	2,788.0	2,751.9	7.3	7.3	79.04	-124.6	-206.2	59.4	45.1	14.27	4.165		
2,860.2	2,815.1	2,847.1	2,803.8	7.7	7.7	80.82	-139.6	-230.2	65.7	50.5	15.17	4.329		
2,900.0	2,849.6	2,886.6	2,837.9	8.0	8.0	81.80	-150.1	-246.9	70.0	54.2	15.80	4.431		
3,000.0	2,936.2	2,985.9	2,924.0	8.8	8.9	83.73	-176.4	-289.0	81.1	63.6	17.47	4.642		
3,100.0	3,022.8	3,085.3	3,010.0	9.7	9.8	85.19	-202.8	-331.1	92.2	73.0	19.20	4.800		
3,200.0	3,109.4	3,184.6	3,096.1	10.6	10.7	86.34	-229.1	-373.2	103.4	82.4	21.00	4.922		
3,300.0	3,196.0	3,284.0	3,182.1	11.5	11.6	87.27	-255.5	-415.3	114.6	91.7	22.84	5.016		
3,400.0	3,282.6	3,383.3	3,268.2	12.4	12.6	88.03	-281.8	-457.4	125.8	101.1	24.71	5.090		
3,500.0	3,369.2	3,482.7	3,354.2	13.4	13.5	88.66	-308.2	-499.5	137.0	110.4	26.61	5.149		
3,600.0	3,455.8	3,582.0	3,440.3	14.3	14.5	89.20	-334.6	-541.6	148.3	119.7	28.53	5.196		
3,700.0	3,542.4	3,681.4	3,526.3	15.3	15.5	89.66	-360.9	-583.7	159.5	129.1	30.47	5.236		
3,800.0	3,629.0	3,780.8	3,612.4	16.2	16.5	90.07	-387.3	-625.9	170.8	138.4	32.43	5.268		
3,900.0	3,715.6	3,880.1	3,698.4	17.2	17.5	90.42	-413.6	-668.0	182.1	147.7	34.39	5.295		
4,000.0	3,802.2	3,979.8	3,784.8	18.2	18.5	90.76	-440.0	-710.1	193.4	157.0	36.35	5.320		
4,100.0	3,888.7	4,081.0	3,874.2	19.2	19.3	92.06	-465.1	-750.3	204.1	165.9	38.15	5.349		
4,200.0	3,975.3	4,181.6	3,965.4	20.2	20.0	94.64	-487.6	-786.1	214.2	174.3	39.87	5.371		
4,300.0	4,061.9	4,281.0	4,057.7	21.1	20.6	98.28	-507.2	-817.6	224.3	182.9	41.44	5.413		
4,400.0	4,148.5	4,378.9	4,150.3	22.1	21.2	102.77	-524.1	-844.4	235.3	192.6	42.73	5.508		
4,500.0	4,235.1	4,474.7	4,242.4	23.1	21.6	107.87	-538.1	-866.8	248.2	204.6	43.64	5.688		
4,600.0	4,321.7	4,568.1	4,333.3	24.1	22.0	113.32	-549.4	-884.9	264.0	219.9	44.11	5.984		
4,700.0	4,408.3	4,658.6	4,422.3	25.1	22.3	118.87	-558.1	-898.8	283.4	239.3	44.14	6.421		
4,803.6	4,498.1	4,749.2	4,512.1	26.2	22.6	124.47	-564.5	-909.0	308.1	264.4	43.76	7.042		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

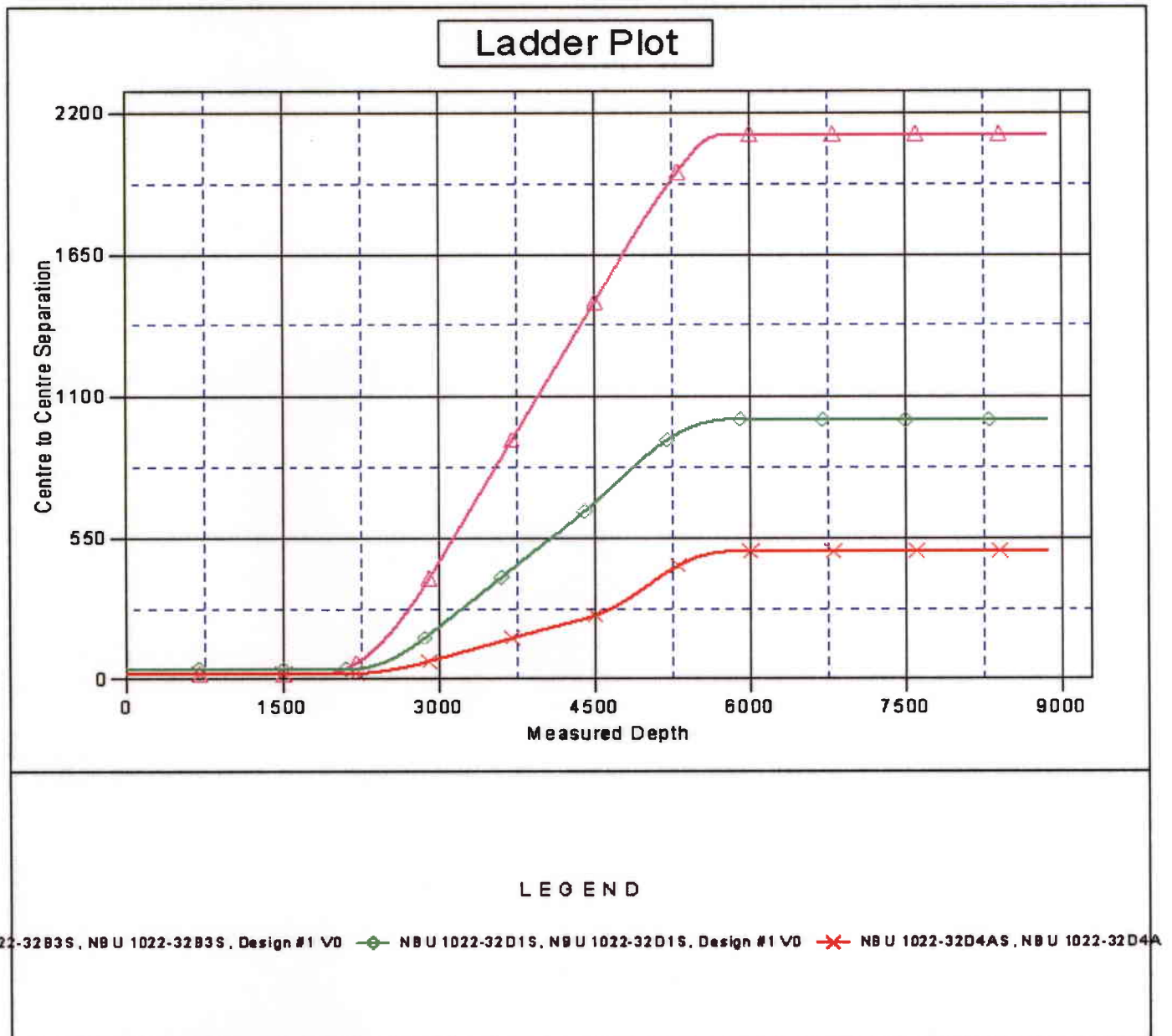
**Company:** ANADARKO PETROLEUM CORP.  
**Project:** UINTAH COUNTY, UTAH (UTM Zone 12N-NAD 27)  
**Reference Site:** ANADARKO 1022-32C PAD  
**Site Error:** 0.0ft  
**Reference Well:** NBU 1022-32D4DS  
**Well Error:** 0.0ft  
**Reference Wellbore:** NBU 1022-32D4DS  
**Reference Design:** Design #1

**Local Co-ordinate Reference:** Well NBU 1022-32D4DS  
**TVD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**MD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** EDM 2003.21 Single User Db  
**Offset TVD Reference:** Offset Datum

Offset Design ANADARKO 1022-32C PAD - NBU 1022-32D4AS - NBU 1022-32D4AS - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
4,900.0	4,582.7	4,831.3	4,593.8	27.0	22.7	129.78	-568.4	-915.2	334.2	291.2	43.00	7.772		
5,000.0	4,672.9	4,915.2	4,677.7	27.7	22.9	134.52	-570.4	-918.5	362.5	320.4	42.08	8.614		
5,100.0	4,765.2	5,002.7	4,765.2	28.3	22.9	138.72	-570.7	-919.0	391.1	350.0	41.10	9.515		
5,200.0	4,859.4	5,096.9	4,859.4	28.8	23.0	142.21	-570.7	-919.0	417.6	377.3	40.25	10.374		
5,300.0	4,955.2	5,192.7	4,955.2	29.3	23.1	144.87	-570.7	-919.0	440.9	401.3	39.62	11.128		
5,400.0	5,052.4	5,289.9	5,052.4	29.7	23.2	146.87	-570.7	-919.0	460.6	421.4	39.17	11.758		
5,470.5	5,121.5	5,359.1	5,121.5	29.9	23.3	147.95	-570.7	-919.0	472.0	433.1	38.94	12.122		
5,500.0	5,150.6	5,388.2	5,150.6	30.0	23.3	148.32	-570.7	-919.0	476.2	437.3	38.86	12.254		
5,600.0	5,249.7	5,487.3	5,249.7	30.3	23.4	149.31	-570.7	-919.0	487.6	448.9	38.67	12.609		
5,700.0	5,349.4	5,587.0	5,349.4	30.5	23.5	149.90	-570.7	-919.0	494.5	455.9	38.57	12.821		
5,803.8	5,453.1	5,690.7	5,453.1	30.6	23.6	15.01	-570.7	-919.0	496.9	458.4	38.56	12.886		
5,900.0	5,549.4	5,786.9	5,549.4	30.7	23.7	15.01	-570.7	-919.0	496.9	458.1	38.80	12.807		
6,000.0	5,649.4	5,886.9	5,649.4	30.7	23.8	15.01	-570.7	-919.0	496.9	457.9	39.06	12.722		
6,100.0	5,749.4	5,986.9	5,749.4	30.8	24.0	15.01	-570.7	-919.0	496.9	457.6	39.32	12.638		
6,200.0	5,849.4	6,086.9	5,849.4	30.9	24.1	15.01	-570.7	-919.0	496.9	457.4	39.58	12.554		
6,300.0	5,949.4	6,186.9	5,949.4	31.0	24.2	15.01	-570.7	-919.0	496.9	457.1	39.85	12.470		
6,400.0	6,049.4	6,286.9	6,049.4	31.1	24.3	15.01	-570.7	-919.0	496.9	456.8	40.12	12.385		
6,500.0	6,149.4	6,386.9	6,149.4	31.2	24.4	15.01	-570.7	-919.0	496.9	456.5	40.40	12.301		
6,600.0	6,249.4	6,486.9	6,249.4	31.2	24.5	15.01	-570.7	-919.0	496.9	456.3	40.67	12.218		
6,700.0	6,349.4	6,586.9	6,349.4	31.3	24.6	15.01	-570.7	-919.0	496.9	456.0	40.95	12.134		
6,800.0	6,449.4	6,686.9	6,449.4	31.4	24.8	15.01	-570.7	-919.0	496.9	455.7	41.24	12.051		
6,900.0	6,549.4	6,786.9	6,549.4	31.5	24.9	15.01	-570.7	-919.0	496.9	455.4	41.52	11.968		
7,000.0	6,649.4	6,886.9	6,649.4	31.6	25.0	15.01	-570.7	-919.0	496.9	455.1	41.81	11.885		
7,100.0	6,749.4	6,986.9	6,749.4	31.7	25.1	15.01	-570.7	-919.0	496.9	454.8	42.10	11.803		
7,200.0	6,849.4	7,086.9	6,849.4	31.8	25.3	15.01	-570.7	-919.0	496.9	454.5	42.40	11.721		
7,300.0	6,949.4	7,186.9	6,949.4	31.9	25.4	15.01	-570.7	-919.0	496.9	454.2	42.69	11.639		
7,400.0	7,049.4	7,286.9	7,049.4	32.0	25.5	15.01	-570.7	-919.0	496.9	453.9	42.99	11.558		
7,500.0	7,149.4	7,386.9	7,149.4	32.1	25.7	15.01	-570.7	-919.0	496.9	453.6	43.30	11.478		
7,600.0	7,249.4	7,486.9	7,249.4	32.2	25.8	15.01	-570.7	-919.0	496.9	453.3	43.60	11.397		
7,700.0	7,349.4	7,586.9	7,349.4	32.3	25.9	15.01	-570.7	-919.0	496.9	453.0	43.91	11.318		
7,800.0	7,449.4	7,686.9	7,449.4	32.4	26.1	15.01	-570.7	-919.0	496.9	452.7	44.22	11.238		
7,900.0	7,549.4	7,786.9	7,549.4	32.5	26.2	15.01	-570.7	-919.0	496.9	452.4	44.53	11.160		
8,000.0	7,649.4	7,886.9	7,649.4	32.6	26.3	15.01	-570.7	-919.0	496.9	452.1	44.84	11.081		
8,100.0	7,749.4	7,986.9	7,749.4	32.7	26.5	15.01	-570.7	-919.0	496.9	451.8	45.16	11.004		
8,200.0	7,849.4	8,086.9	7,849.4	32.8	26.6	15.01	-570.7	-919.0	496.9	451.5	45.48	10.926		
8,300.0	7,949.4	8,186.9	7,949.4	32.9	26.7	15.01	-570.7	-919.0	496.9	451.1	45.80	10.850		
8,400.0	8,049.4	8,286.9	8,049.4	33.0	26.9	15.01	-570.7	-919.0	496.9	450.8	46.13	10.774		
8,500.0	8,149.4	8,386.9	8,149.4	33.2	27.0	15.01	-570.7	-919.0	496.9	450.5	46.45	10.698		
8,600.0	8,249.4	8,486.9	8,249.4	33.3	27.2	15.01	-570.7	-919.0	496.9	450.2	46.78	10.623		
8,700.0	8,349.4	8,586.9	8,349.4	33.4	27.3	15.01	-570.7	-919.0	496.9	449.8	47.11	10.549		
8,800.0	8,449.4	8,686.9	8,449.4	33.5	27.5	15.01	-570.7	-919.0	496.9	449.5	47.44	10.475		
8,850.6	8,500.0	8,737.6	8,500.0	33.6	27.5	15.01	-570.7	-919.0	496.9	449.3	47.61	10.438		

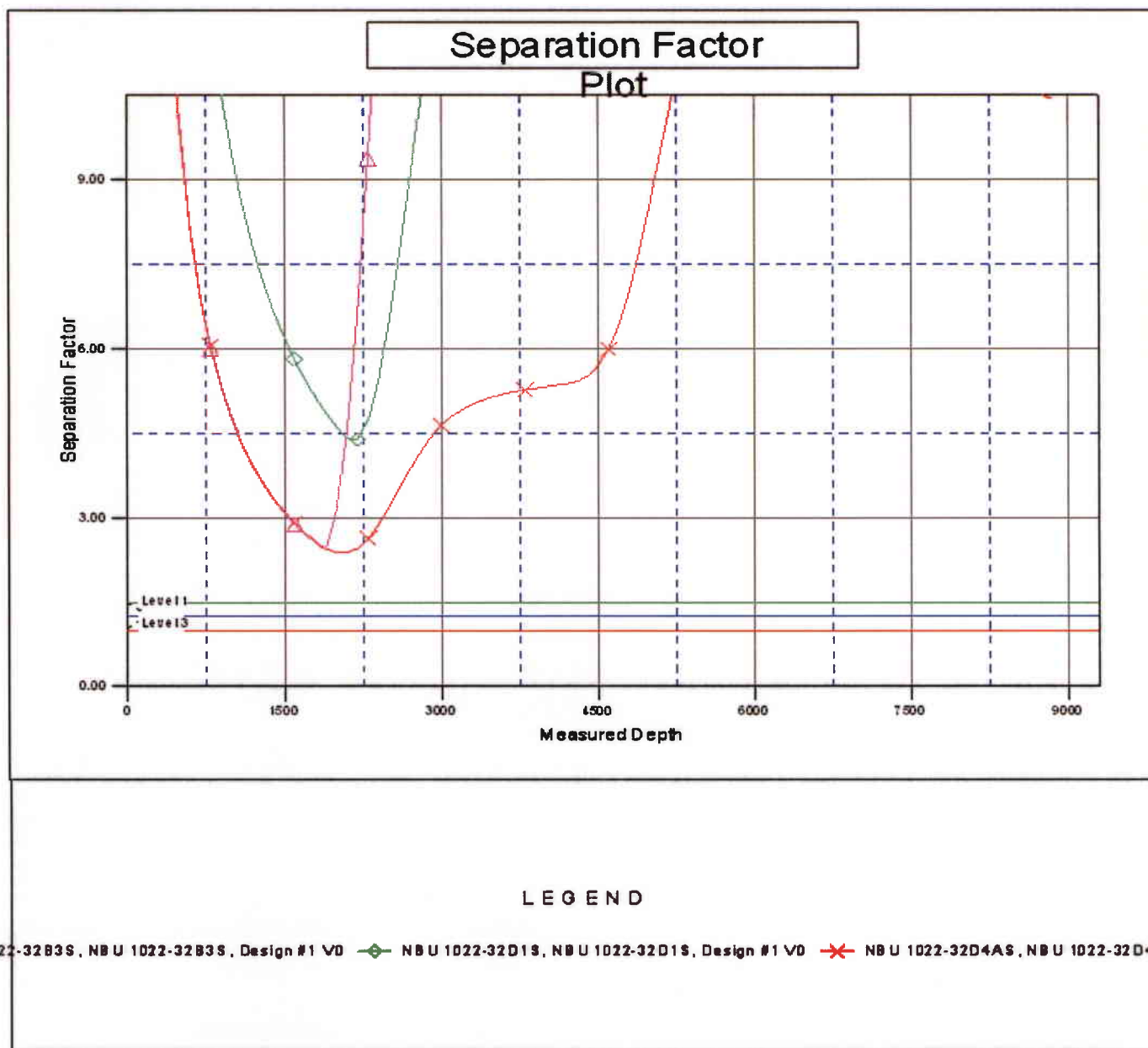
<b>Company:</b>	ANADARKO PETROLEUM CORP.	<b>Local Co-ordinate Reference:</b>	Well NBU 1022-32D4DS
<b>Project:</b>	UINTAH COUNTY, UTAH (UTM Zone 12N-NAD 27)	<b>TVD Reference:</b>	WELL @ 5467.0ft (Original Well Elev)
<b>Reference Site:</b>	ANADARKO 1022-32C PAD	<b>MD Reference:</b>	WELL @ 5467.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	NBU 1022-32D4DS	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	NBU 1022-32D4DS	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 5467.0ft (Original Well Elev) Coordinates are relative to: NBU 1022-32D4DS  
Offset Depths are relative to Offset Datum  
Central Meridian is 111° 30' 0.000 W °  
Coordinate System is US State Plane 1927 (Exact solution), Utah Central 4302  
Grid Convergence at Surface is: 1.30°



<b>Company:</b>	ANADARKO PETROLEUM CORP.	<b>Local Co-ordinate Reference:</b>	Well NBU 1022-32D4DS
<b>Project:</b>	UINTAH COUNTY, UTAH (UTM Zone 12N-NAD 27)	<b>TVD Reference:</b>	WELL @ 5467.0ft (Original Well Elev)
<b>Reference Site:</b>	ANADARKO 1022-32C PAD	<b>MD Reference:</b>	WELL @ 5467.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	NBU 1022-32D4DS	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	NBU 1022-32D4DS	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 5467.0ft (Original Well Elev) Coordinates are relative to: NBU 1022-32D4DS  
Offset Depths are relative to Offset Datum  
Central Meridian is 111° 30' 0.000 W °  
Coordinate System is US State Plane 1927 (Exact solution), Utah Central 4302  
Grid Convergence at Surface is: 1.30°



**Database:** EDM 2003.21 Single User Db  
**Company:** ANADARKO PETROLEUM CORP.  
**Project:** UINTAH COUNTY, UTAH (UTM Zone 12N-NAD 27)  
**Site:** ANADARKO 1022-32C PAD  
**Well:** NBU 1022-32D4DS  
**Wellbore:** NBU 1022-32D4DS  
**Design:** Design #1

**Local Co-ordinate Reference:** Well NBU 1022-32D4DS  
**TVD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**MD Reference:** WELL @ 5467.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

**Planned Survey**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,850.6	0.00	0.00	8,500.0	-1,050.7	-1,047.7	1,483.8	0.00	0.00	0.00

TD at 8850.6 - PBHL NBU 1022-32D4DS

**Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,860.0	1,860.0	0.0	0.0	Start Build 3.00
2,860.2	2,815.1	-181.2	-180.7	Start 1943.5 hold at 2860.2 MD
4,803.6	4,498.1	-869.4	-867.0	Start DLS 3.00 TFO 180.00
5,470.5	5,121.5	-1,030.1	-1,027.2	Start Drop -3.00
5,803.8	5,453.1	-1,050.7	-1,047.7	Start 3046.9 hold at 5803.8 MD
8,850.6	8,500.0	-1,050.7	-1,047.7	TD at 8850.6

**WORKSHEET**  
**APPLICATION FOR PERMIT TO DRILL**

APD RECEIVED: 07/08/2008

API NO. ASSIGNED: 43-047-40207

WELL NAME: NBU 1022-32D4DS

OPERATOR: KERR-MCGEE OIL & GAS ( N2995 )

PHONE NUMBER: 720-929-6226

CONTACT: KEVIN MCINTYRE

PROPOSED LOCATION:

NENW 32 100S 220E

SURFACE: 0192 FNL 2096 FWL

BOTTOM: 1240 FNL 1050 FWL

COUNTY: UINTAH

LATITUDE: 39.91203 LONGITUDE: -109.4646

UTM SURF EASTINGS: 631233 NORTHINGS: 4418912

FIELD NAME: NATURAL BUTTES ( 630 )

INSPECT LOCATN BY: / /

**Tech Review**

**Initials**

**Date**

Engineering

DKD

9/16/08

Geology

Surface

LEASE TYPE: 3 - State

LEASE NUMBER: ST ML 22798

SURFACE OWNER: 3 - State

PROPOSED FORMATION: WSMVD

COALBED METHANE WELL? NO

RECEIVED AND/OR REVIEWED:

☒ Plat

☒ Bond: Fed[] Ind[] Sta[] Fee[]  
(No. 22013542 )

N Potash (Y/N)

☒ Oil Shale 190-5 (B) or 190-3 or 190-13

☒ Water Permit  
(No. 43-8496 )

N RDCC Review (Y/N)  
(Date: \_\_\_\_\_ )

N/A Fee Surf Agreement (Y/N)

N/A Intent to Commingle (Y/N)

LOCATION AND SITING:

       R649-2-3.

Unit: NATURAL BUTTES

       R649-3-2. General

Siting: 460' From Qtr/Qtr & 920' Between Wells

       R649-3-3. Exception

☒ Drilling Unit

Board Cause No: 173-14

Eff Date: 12-2-1999

Siting: 460' R u bdy of uncomm Tract

☒ R649-3-11. Directional Drill

COMMENTS:

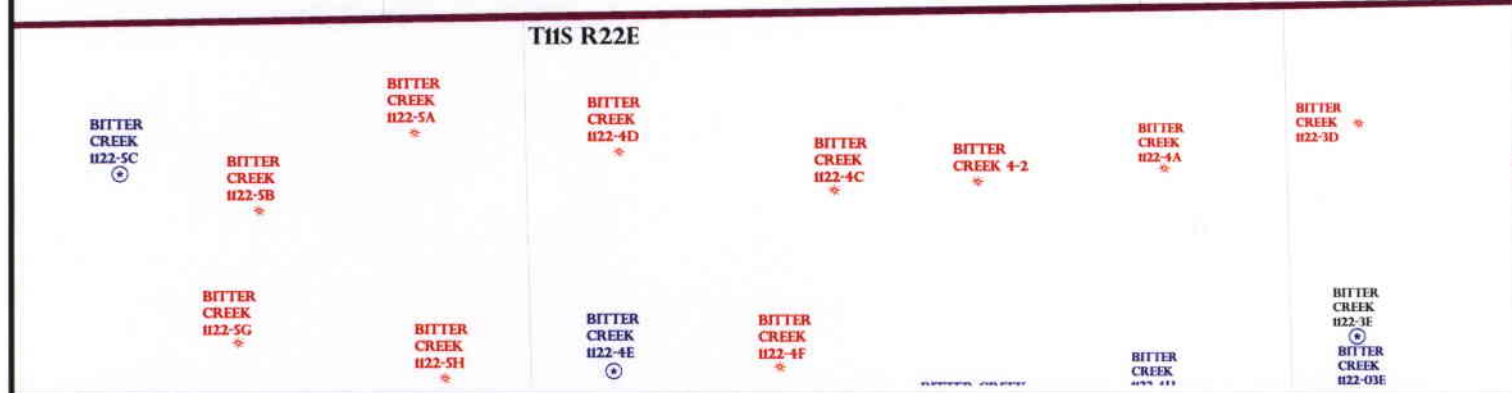
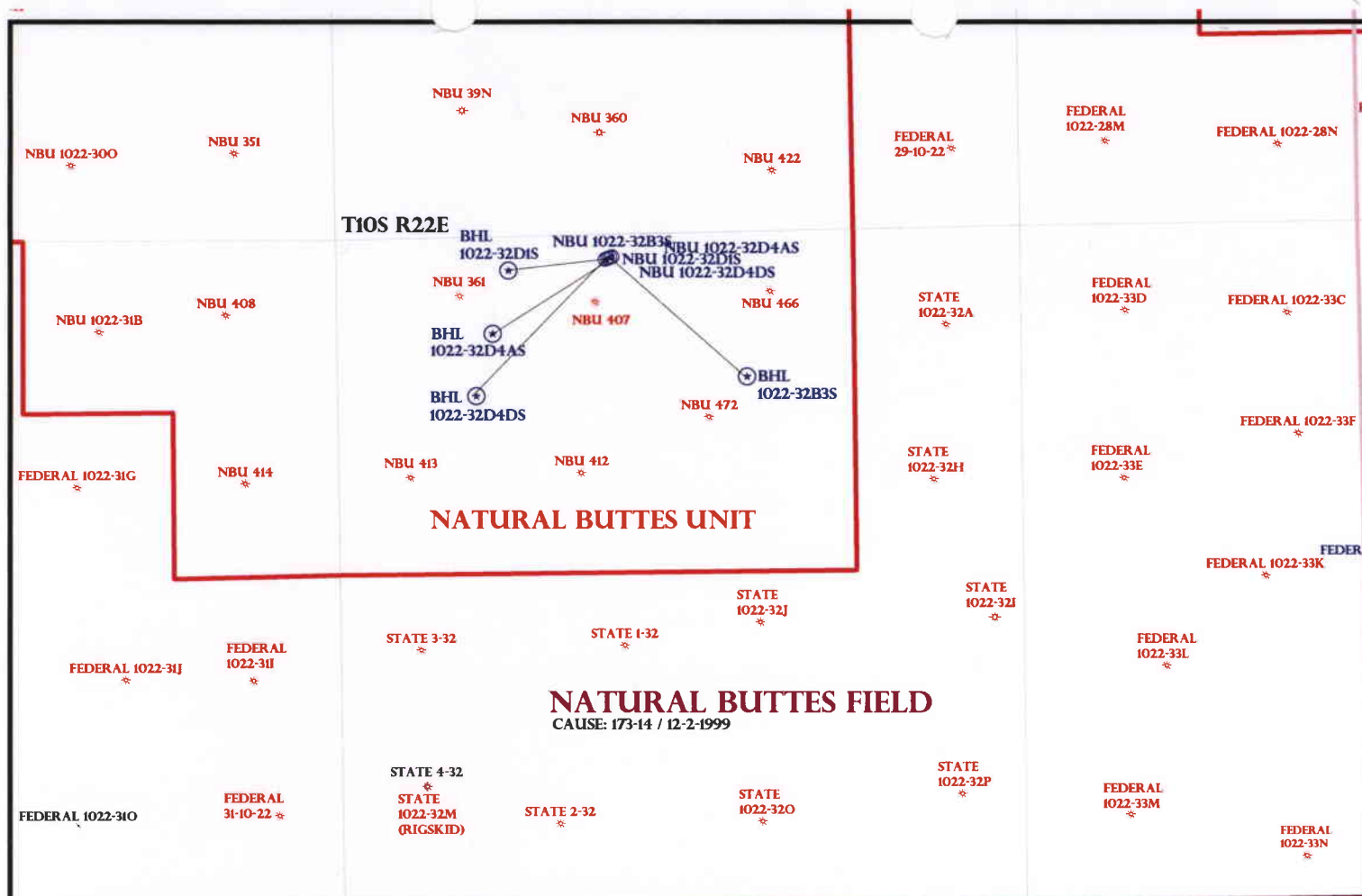
Needs Permit (06-18-08)

STIPULATIONS:

1- STATEMENT OF BASIS

2- OIL SHALE

3- Surface Egg Cont Step



**OPERATOR: KERR MCGEE O&G (N2995)**





SEC: 32 T.10S R. 22E

FIELD: NATURAL BUTTES (630)

COUNTY: UINTAH

**CAUSE: 173-14 / 12-2-1999**
















**Field Status**

	ABANDONED
	ACTIVE
	COMBINED
	INACTIVE
	PROPOSED
	STORAGE
	TERMINATED

**Unit Status**

- EXPLORATORY
- GAS STORAGE
- NF PP OIL
- NF SECONDARY
- PENDING
- PI OIL
- PP GAS
- PP GEOTHERML
- PP OIL
- SECONDARY
- TERMINATED

**Wells Status**

-  **GAS INJECTION**
-  **GAS STORAGE**
-  **LOCATION ABANDONED**
-  **NEW LOCATION**
-  **PLUGGED & ABANDONED**
-  **PRODUCING GAS**
-  **PRODUCING OIL**
-  **SHUT-IN GAS**
-  **SHUT-IN OIL**
-  **TEMP. ABANDONED**
-  **TEST WELL**
-  **WATER INJECTION**
-  **WATER SUPPLY**
-  **WATER DISPOSAL**
-  **DRILLING**



## OIL, GAS & MINING



PREPARED BY: DIANA MASON  
DATE: 14-JULY-2008

# Application for Permit to Drill

## Statement of Basis

8/20/2008

Utah Division of Oil, Gas and Mining

Page 1

APD No	API WellNo	Status	Well Type	Surf Ownr	CBM
868	43-047-40207-00-00		GW	S	No
<b>Operator</b>	KERR-MCGEE OIL & GAS ONSHORE, L.P.	<b>Surface Owner-APD</b>			
<b>Well Name</b>	NBU 1022-32D4DS	<b>Unit</b>			
<b>Field</b>	UNDESIGNATED	<b>Type of Work</b>			
<b>Location</b>	NENW 32 10S 22E S 192 FNL 2096 FWL	GPS Coord (UTM)	631233E	4418912N	

### Geologic Statement of Basis

Kerr McGee proposes to set 2,400' of surface casing at this location. The depth to the base of the moderately saline water at this location is estimated to be at a depth of 3,400'. A search of Division of Water Rights records shows no water wells within a 10,000 foot radius of the center of Section 32. The surface formation at this site is the Uinta Formation. The Uinta Formation is made up of interbedded shales and sandstones. The sandstones are mostly lenticular and discontinuous and should not be a significant source of useable ground water. Production casing cement should be brought up above the base of the moderately saline ground water to isolate it from fresher waters uphole.

Brad Hill  
APD Evaluator

8/20/2008  
Date / Time

### Surface Statement of Basis

This location is in the East Bench area of the Natural Buttes Unit approximately 20.8 road miles southeast of Ouray, Ut.. It is accessed by the Seep Ridge Road, Uintah County roads and existing or planned oil field development roads to within 0.2 mile of the site, which will require new or re-construction.

The general area is within an unnamed drainage between Sand Wash and Bitter Creek. This un-named wash drains northerly to the White River a distance of approximately 7 miles. The area is characterized by rolling hills, which are frequently divided by somewhat gentle draws. This unnamed wash is an ephemeral drainage. No springs, seeps or streams exist in the area. An occasional pond constructed to supply water for cattle and antelope exists. The washes are sometimes rimmed with steep side hills, which have exposed sand stone bedrock cliffs along the rims.

Four gas wells are proposed on this pad. The location is on the out-slope of a lower level bench. Higher benches and a ridge are to the south. The pad will be constructed by excavating into the toe of the slope to the south, with the fill moved to the north into an open wide swale. Drainages intersect the site on both the east and west. These drainages are planned for re-routing around the pad. The selected site has no apparent concerns for constructing a pad, drilling and operating the planned wells and is the best location in the immediate area.

Both the surface and minerals are owned by SITLA. Jim Davis of SITLA reviewed the site and had no concerns regarding the proposal.

Ben Williams of the Utah Division of Wildlife Resources was invited the pre-site visit and did not attend

Floyd Bartlett  
Onsite Evaluator

6/18/2008  
Date / Time

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# Application for Permit to Drill

## Statement of Basis

8/20/2008

Utah Division of Oil, Gas and Mining

Page 2

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### Conditions of Approval / Application for Permit to Drill

Category	Condition
Pits	A synthetic liner with a minimum thickness of 16 mils with a felt subliner shall be properly installed and maintained in the reserve pit.
Surface	Drainages adjacent to the proposed pad shall be diverted around the location.
Surface	The reserve pit shall be fenced upon completion of drilling operations.

# **ON-SITE PREDRILL EVALUATION**

## **Utah Division of Oil, Gas and Mining**

**Operator** KERR-MCGEE OIL & GAS ONSHORE, L.P.  
**Well Name** NBU 1022-32D4DS  
**API Number** 43-047-40207-0      **APD No** 868      **Field/Unit** UNDESIGNATED  
**Location:** 1/4,1/4 NENW      **Sec** 32      **Tw** 10S      **Rng** 22E      192 FNL 2096 FWL  
**GPS Coord (UTM)** 631211      4418923      **Surface Owner**

### **Participants**

Floyd Bartlett and David Hackford (DOGM), Jim Davis (SITLA), Raleen White, Kevin McIntyre, Clay Einerson and Tony Kzneck (Kerr McGee) and David Kay (Uintah Engineering and Land Surveying).

### **Regional/Local Setting & Topography**

This location is in the East Bench area of the Natural Buttes Unit approximately 20.8 road miles southeast of Ouray, Ut.. It is accessed by the Seep Ridge Road, Uintah County roads and existing or planned oil field development roads to within 0.2 mile of the site, which will require new or re-construction.

The general area is within an unnamed drainage between Sand Wash and Bitter Creek. This un-named wash drains northerly to the White River a distance of approximately 7 miles. The area is characterized by rolling hills, which are frequently divided by somewhat gentle draws. This unnamed wash is an ephemeral drainage. No springs, seeps or streams exist in the area. An occasional pond constructed to supply water for cattle and antelope exists. The washes are sometimes rimmed with steep side hills, which have exposed sand stone bedrock cliffs along the rims.

Four gas wells are proposed on this pad. The location is on the out-slope of a lower level bench. Higher benches and a ridge are to the south. The pad will be constructed by excavating into the toe of the slope to the south, with the fill moved to the north into an open wide swale. Drainages intersect the site on both the east and west. These drainages are planned for re-routing around the pad. The selected site has no apparent concerns for constructing a pad, drilling and operating the planned wells and is the best location in the immediate area.

Both the surface and minerals are owned by SITLA.

### **Surface Use Plan**

#### **Current Surface Use**

Grazing  
Recreational  
Wildlife Habitat

#### **New Road**

<b>Miles</b>	<b>Well Pad</b>		<b>Src Const Material</b>	<b>Surface Formation</b>
0.2	<b>Width</b> 291	<b>Length</b> 350	Onsite	UNTA

**Ancillary Facilities** N

### **Waste Management Plan Adequate?**

### **Environmental Parameters**

**Affected Floodplains and/or Wetland** N

#### **Flora / Fauna**

Vegetation is a salt desert shrub type. Principal species present are cheatgrass, prickly pear, horsebrush, greasewood, bottle brush, globemallow, shadscale, Indian ricegrass, Russian thistle, halogeton, pepper grass and curly mesquite grass.

Cattle, antelope and small mammals and birds.

### Soil Type and Characteristics

Soils are a shallow sandy loam with some exposed rock.

Erosion Issues N

Sedimentation Issues N

Site Stability Issues N

Drainage Diversion Required Y

Drainages intersect the site on both the east and west. These drainages are planned for re-routing around the pad.

Berm Required? N

Erosion Sedimentation Control Required? N

Paleo Survey Run? Y      Paleo Potential Observed? N      Cultural Survey Run?      Cultural Resources?

### Reserve Pit

#### Site-Specific Factors

		Site Ranking
Distance to Groundwater (feet)	>200	0
Distance to Surface Water (feet)	>1000	0
Dist. Nearest Municipal Well (ft)		
Distance to Other Wells (feet)	<300	20
Native Soil Type	Mod permeability	10
Fluid Type	Fresh Water	5
Drill Cuttings	Normal Rock	0
Annual Precipitation (inches)	<10	0
Affected Populations	<10	0
Presence Nearby Utility Conduits	Not Present	0

Final Score      35      1      Sensitivity Level

#### Characteristics / Requirements

The reserve pit is planned in an area of cut in the northeast corner of the location. Dimensions are 100' x 220' x 10' deep with 2' of freeboard. A liner with a minimum thickness of 16 mils. and a felt sub-liner are required.

Closed Loop Mud Required? N      Liner Required? Y      Liner Thickness 16      Pit Underlayment Required? Y

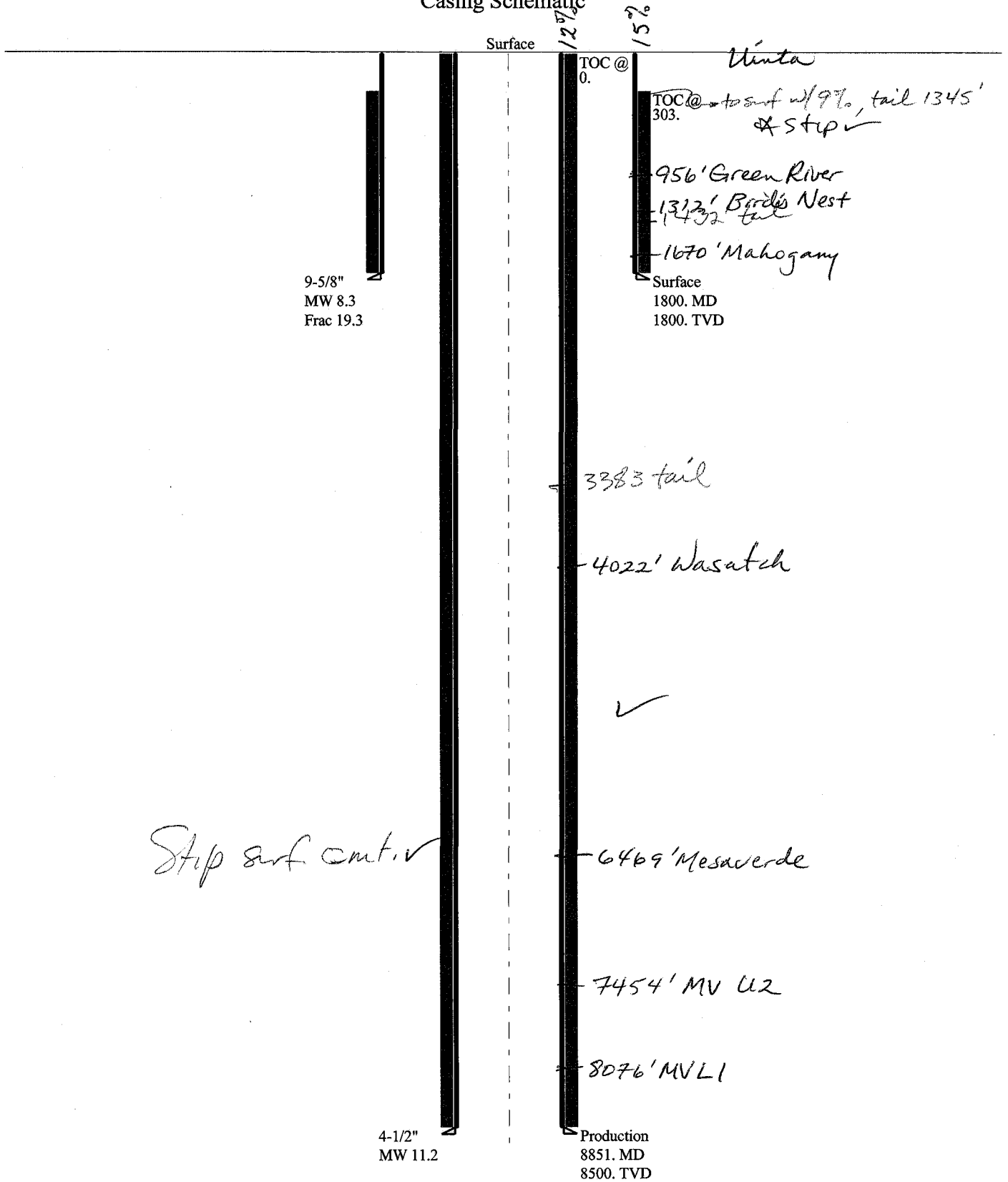
### Other Observations / Comments

Floyd Bartlett  
Evaluator

6/18/2008  
Date / Time

43047402070000 NBU 1022-32D4DS

Casing Schematic



Well name:

**43047402070000 NBU 1022-32D4DS**Operator: **Kerr McGee Oil & Gas Onshore L.P.**String type: **Surface**

Project ID:

**43-047-40207-0000**Location: **Uintah County, Utah****Design parameters:****Collapse**

Mud weight: 8.330 ppg

Design is based on evacuated pipe.

**Minimum design factors:****Collapse:**

Design factor 1.125

**Burst:**

Design factor 1.00

**Environment:**

H2S considered? No

Surface temperature: 75 °F

Bottom hole temperature: 100 °F

Temperature gradient: 1.40 °F/100ft

Minimum section length: 1,300 ft

Cement top: 303 ft

**Burst**

Max anticipated surface

pressure: 1,584 psi

Internal gradient: 0.120 psi/ft

Calculated BHP 1,800 psi

No backup mud specified.

**Tension:**

8 Round STC: 1.80 (J)

8 Round LTC: 1.80 (J)

Buttress: 1.60 (J)

Premium: 1.50 (J)

Body yield: 1.50 (B)

Tension is based on buoyed weight.

Neutral point: 1,578 ft

Completion type is subs

**Non-directional string.****Re subsequent strings:**

Next setting depth: 8,500 ft

Next mud weight: 11.200 ppg

Next setting BHP: 4,946 psi

Fracture mud wt: 19.250 ppg

Fracture depth: 1,800 ft

Injection pressure: 1,800 psi

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Internal Capacity (ft³)
1	1800	9.625	36.00	J-55	LT&C	1800	1800	8.796	781.3
Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (Kips)	Tension Strength (Kips)	Tension Design Factor
1	779	2020	2.594	1800	3520	1.96	57	453	7.97 J

Prepared by: Helen Sadik-Macdonald  
Div of Oil, Gas & MineralsPhone: (801) 538-5357  
FAX: (801) 359-3940Date: September 15, 2008  
Salt Lake City, Utah**Remarks:**

Collapse is based on a vertical depth of 1800 ft, a mud weight of 8.33 ppg. The casing is considered to be evacuated for collapse purposes. Collapse strength is based on the Westcott, Dunlop &amp; Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

*Engineering responsibility for use of this design will be that of the purchaser.*

Well name:	<b>43047402070000 NBU 1022-32D4DS</b>	
Operator:	<b>Kerr McGee Oil &amp; Gas Onshore L.P.</b>	
String type:	Production	Project ID: 43-047-40207-0000
Location:	Uintah County, Utah	

**Design parameters:**
**Collapse**

Mud weight: 11.200 ppg  
Design is based on evacuated pipe.

**Minimum design factors:**
**Collapse:**

Design factor 1.125

**Burst:**

Design factor 1.00

**Environment:**

H2S considered? No  
Surface temperature: 75 °F  
Bottom hole temperature: 194 °F  
Temperature gradient: 1.40 °F/100ft  
Minimum section length: 1,500 ft

Cement top: Surface

**Burst**

Max anticipated surface pressure: 3,076 psi  
Internal gradient: 0.220 psi/ft  
Calculated BHP 4,946 psi

No backup mud specified.

**Tension:**

8 Round STC: 1.80 (J)  
8 Round LTC: 1.80 (J)  
Buttress: 1.60 (J)  
Premium: 1.50 (J)  
Body yield: 1.50 (B)

Completion type is subs

**Directional well information:**

Kick-off point 1860 ft  
Departure at shoe: 1484 ft  
Maximum dogleg: 3 °/100ft  
Inclination at shoe: 0 °

Tension is based on buoyed weight.

Neutral point: 7,428 ft

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Internal Capacity (ft³)
1	8851	4.5	11.60	I-80	LT&C	8500	8851	3.875	772.4

Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (Kips)	Tension Strength (Kips)	Tension Design Factor
1	4946	6360	1.286	4946	7780	1.57	82	212	2.58 J

Prepared by: Helen Sadik-Macdonald  
Div of Oil, Gas & Minerals

Phone: (801) 538-5357  
FAX: (801) 359-3940

Date: September 15, 2008  
Salt Lake City, Utah

**Remarks:**

Collapse is based on a vertical depth of 8500 ft, a mud weight of 11.2 ppg. The casing is considered to be evacuated for collapse purposes. Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Collapse strength is (biaxially) derated for doglegs in directional wells by multiplying the tensile stress by the cross section area to calculate a

*Engineering responsibility for use of this design will be that of the purchaser.*

# BOPE REVIEW

Kerr-McGee NBU 1022-32D4DS API 43-047-40207-0000

## INPUT

Well Name

Kerr-McGee NBU 1022-32D4DS API 43-047-40207-0000			
String 1	String 2		
Casing Size (")	9 5/8	4 1/2	
Setting Depth (TVD)	1800	8500	
Previous Shoe Setting Depth (TVD)	20	1800	
Max Mud Weight (ppg)	8.4	11.2	✓
BOPE Proposed (psi)	500	5000	
Casing Internal Yield (psi)	3520	7780	
Operators Max Anticipated Pressure (psi)	5270	11.9 ppg	✓

## Calculations

		String 1	9 5/8 "	
Max BHP [psi]	.052*Setting Depth*MW =		786	
MASP (Gas) [psi]	Max BHP-(0.12*Setting Depth) =		570	BOPE Adequate For Drilling And Setting Casing at Depth?
MASP (Gas/Mud) [psi]	Max BHP-(0.22*Setting Depth) =		390	NO - OK Air Drill to surface shoe with diverter
				YES
				*Can Full Expected Pressure Be Held At Previous Shoe?
Pressure At Previous Shoe	Max BHP-.22*(Setting Depth - Previous Shoe Depth) =		395	NO Reasonable Depth
Required Casing/BOPE Test Pressure			1800 psi	
*Max Pressure Allowed @ Previous Casing Shoe =			20 psi	*Assumes 1psi/ft frac gradient

## Calculations

		String 2	4 1/2 "	
Max BHP [psi]	.052*Setting Depth*MW =		4950	
MASP (Gas) [psi]	Max BHP-(0.12*Setting Depth) =		3930	BOPE Adequate For Drilling And Setting Casing at Depth?
MASP (Gas/Mud) [psi]	Max BHP-(0.22*Setting Depth) =		3080	YES ✓
				YES
				*Can Full Expected Pressure Be Held At Previous Shoe?
Pressure At Previous Shoe	Max BHP-.22*(Setting Depth - Previous Shoe Depth) =		3476	NO Reasonable
Required Casing/BOPE Test Pressure			5000 psi	
*Max Pressure Allowed @ Previous Casing Shoe =			1800 psi	*Assumes 1psi/ft frac gradient

# United States Department of the Interior

## BUREAU OF LAND MANAGEMENT

Utah State Office  
P.O. Box 45155  
Salt Lake City, Utah 84145-0155

IN REPLY REFER TO:  
3160  
(UT-922)

July 15, 2008

Memorandum

To: Assistant District Manager Minerals, Vernal District  
From: Michael Coulthard, Petroleum Engineer  
Subject: 2008 Plan of Development Natural Buttes Unit  
Uintah County, Utah.

Pursuant to email between Diana Whitney, Division of Oil, Gas and Mining, and Mickey Coulthard, Utah State Office, Bureau of Land Management, the following wells are planned for calendar year 2008 within the Natural Buttes Unit, Uintah County, Utah.

API #	WELL NAME	LOCATION
-------	-----------	----------

(Proposed PZ Wasatch/MesaVerde)

43-047-40184	NBU 921-30FT	Sec 30 T09S R21E 1585 FNL 2614 FWL
43-047-40185	NBU 921-31BT	Sec 31 T09S R21E 0670 FNL 2008 FEL
43-047-40170	NBU 921-27KT	Sec 27 T09S R21E 1527 FSL 1821 FWL
43-047-40171	NBU 921-27MT	Sec 27 T09S R21E 0634 FSL 0931 FWL
43-047-40172	NBU 921-27OT	Sec 27 T09S R21E 0646 FSL 2211 FEL
43-047-40173	NBU 921-27HT	Sec 27 T09S R21E 2025 FNL 0623 FEL
43-047-40174	NBU 921-27LT	Sec 27 T09S R21E 1954 FSL 0641 FWL
43-047-40175	NBU 921-33K	Sec 33 T09S R21E 2066 FSL 1926 FWL
43-047-40227	NBU 921-27C2D	Sec 27 T09S R21E 0650 FNL 1730 FWL
43-047-40203	NBU 921-27D2DS	Sec 27 T09S R21E 0660 FNL 1713 FWL
	BHL	Sec 27 T09S R21E 0395 FNL 0350 FWL
43-047-40202	NBU 921-27D2AS	Sec 27 T09S R21E 0640 FNL 1747 FWL
	BHL	Sec 27 T09S R21E 0050 FNL 0350 FWL
43-047-40201	NBU 921-27C2AS	Sec 27 T09S R21E 0630 FNL 1765 FWL
	BHL	Sec 27 T09S R21E 0300 FNL 1730 FWL
43-047-40169	NBU 921-26IT	Sec 26 T09S R21E 1964 FSL 0674 FEL
43-047-40176	NBU 922-29NT	Sec 29 T09S R22E 0845 FSL 1627 FWL
43-047-40177	NBU 922-29KT	Sec 29 T09S R22E 1795 FSL 1936 FWL
43-047-40178	NBU 922-31BT	Sec 31 T09S R22E 0888 FNL 2191 FEL

43-047-40179	NBU 922-32ET	Sec 32	T09S R22E	2477	FNL 0094	FWL
43-047-40186	NBU 922-33OT	Sec 33	T09S R22E	0692	FSL 1465	FEL
43-047-40187	NBU 922-33NT	Sec 33	T09S R22E	0890	FSL 2291	FWL
43-047-40188	NBU 922-33IT	Sec 33	T09S R22E	2115	FSL 0579	FEL
43-047-40191	NBU 1022-04GT	Sec 04	T10S R22E	1897	FNL 1861	FEL
43-047-40189	NBU 922-35IT	Sec 35	T09S R22E	2133	FSL 0627	FEL
43-047-40190	NBU 1022-01CT	Sec 01	T10S R22E	0819	FNL 2106	FWL
43-047-40192	NBU 1022-08IT	Sec 08	T10S R22E	1757	FSL 0323	FEL
43-047-40193	NBU 1022-08GT	Sec 08	T10S R22E	2313	FNL 1922	FEL
43-047-40194	NBU 1022-09AT	Sec 09	T10S R22E	0472	FNL 0582	FEL
43-047-40195	NBU 1022-10HT	Sec 10	T10S R22E	1798	FNL 0297	FEL
43-047-40196	NBU 1022-10FT	Sec 10	T10S R22E	2200	FNL 2094	FWL
43-047-40204	NBU 1022-32D1S	Sec 32	T10S R22E	0205	FNL 2058	FWL
	BHL	Sec 32	T10S R22E	0270	FNL 1310	FWL
43-047-40205	NBU 1022-32D4AS	Sec 32	T10S R22E	0198	FNL 2077	FWL
	BHL	Sec 32	T10S R22E	0760	FNL 1180	FWL
43-047-40206	NBU 1022-32B3S	Sec 32	T10S R22E	0185	FNL 2114	FWL
	BHL	Sec 32	T10S R22E	1150	FNL 2130	FEL
43-047-40207	NBU 1022-32D4DS	Sec 32	T10S R22E	0192	FNL 2096	FWL
	BHL	Sec 32	T10S R22E	1240	FNL 1050	FWL

This office has no objection to permitting the wells at this time.

/s/ Michael L. Coulthard

bcc: File - Natural Buttes Unit  
 Division of Oil Gas and Mining  
 Central Files  
 Agr. Sec. Chron  
 Fluid Chron

MCoulthard:mc:7-15-08



Kerr-McGee Oil & Gas Onshore LP  
1999 Broadway, Suite 3700  
Denver, CO 80205

July 21, 2008

Mrs. Diana Mason  
Division of Oil, Gas and Mining  
P.O. Box 145801  
Salt Lake City, UT 84114-6100

Re: Directional Drilling R649-3-11  
NBU 1022-32D4DS  
T10S-22E  
Section 32: NWNW  
Surface: 192' FNL, 2096' FWL  
Bottom Hole: 1240' FNL, 1050' FEL  
Uintah County, Utah

Dear Mrs. Mason:

Pursuant to the filing of Kerr-McGee Oil & Gas Onshore LP's (Kerr-McGee) Application for Permit to Drill regarding the above referenced well, we are hereby submitting this letter in accordance with Oil & Gas Conservation Rule R649-3-11 pertaining to the Exception to Location and Siting of Wells.

- Kerr-McGee's NBU 1022-32D4DS is located within the Natural Buttes Unit area.
- Kerr-McGee is permitting this well as a directional well in order to minimize surface disturbance. Locating the well at the surface location and directionally drilling from this location, Kerr-McGee will be able to utilize the existing road and pipelines in the area.
- Furthermore, Kerr-McGee certifies that it is the sole working interest owner within 460 feet of the entire directional well bore and all of section 32 (State Lease UT ST ML 22798).

Therefore, based on the above stated information Kerr-McGee Oil & Gas Onshore LP requests the permit be granted pursuant to R649-3-11.

Sincerely,

KERR-MCGEE OIL & GAS ONSHORE LP

Jason K. Rayburn  
Landman

RECEIVED  
JUL 22 2008  
DIV. OF OIL, GAS & MINING

**From:** Jim Davis  
**To:** Bonner, Ed; Mason, Diana  
**Date:** 10/23/2008 8:34 AM  
**Subject:** A few more KMG approvals.

The following wells have been cleared by SITLA including arch and paleo clearance.

Kerr-McGee's NBU 1022-32D1S [API #4304740204]  
Kerr-McGee's NBU 1022-32D4AS [API #4304740205]  
Kerr-McGee's NBU 1022-32B3S [API #4304740206]  
Kerr-McGee's NBU 1022-32D4DS [API #4304740207]

I've sent out three approval e-mails this morning. Sorry I didn't have them all grouped together- they've just been in a jumble on my desk.

-Jim

Jim Davis  
Utah Trust Lands Administration  
jimdavis1@utah.gov  
Phone: (801) 538-5156



JON M. HUNTSMAN, JR.  
Governor

GARY R. HERBERT  
Lieutenant Governor

# State of Utah

## DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER  
Executive Director

### Division of Oil, Gas and Mining

JOHN R. BAZA  
Division Director

November 4, 2008

Kerr-McGee Oil & Gas Onshore, LP  
P O Box 173779  
Denver, CO 80217-3779

Re: NBU 1022-32D4DS Well, 192' FNL, 2096' FWL, NE NW, Sec. 32, T. 10 South,  
R. 22 East, Bottom Location 1240' FNL, 1050' FWL, NW NW, Sec. 32, T. 10 South,  
R. 22 East, Uintah County, Utah

Gentlemen:

Pursuant to the provisions and requirements of Utah Code Ann. § 40-6-1 *et seq.*, Utah Administrative Code R649-3-1 *et seq.*, and the attached Conditions of Approval, approval to drill the referenced well is granted.

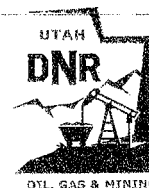
This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-047-40207.

Sincerely,

Gil Hunt  
Associate Director

pab  
Enclosures

cc: Uintah County Assessor  
SITLA  
Bureau of Land Management, Vernal Office



Operator: Kerr-McGee Oil & Gas Onshore, LP  
Well Name & Number NBU 1022-32D4DS  
API Number: 43-047-40207  
Lease: ST ML 22798

Location: NE NW Sec. 32 T. 10 South R. 22 East  
Bottom Location: NW NW Sec. 32 T. 10 South R. 22 East

### Conditions of Approval

#### 1. General

Compliance with the requirements of Utah Admin. R. 649-1 *et seq.*, the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for permit to drill.

#### 2. Notification Requirements

The operator is required to notify the Division of Oil, Gas and Mining of the following action during drilling of this well:

- 24 hours prior to cementing or testing casing – contact Dan Jarvis
- 24 hours prior to testing blowout prevention equipment – contact Dan Jarvis
- 24 hours prior to spudding the well – contact Carol Daniels
- Within 24 hours of any emergency changes made to the approved drilling program – contact Dustin Doucet
- Prior to commencing operations to plug and abandon the well – contact Dan Jarvis

The operator is required to get approval from the Division of Oil, Gas and Mining before performing any of the following actions during the drilling of this well:

- Plugging and abandonment or significant plug back of this well – contact Dustin Doucet
- Any changes to the approved drilling plan – contact Dustin Doucet

The following are Division of Oil, Gas and Mining contacts and their telephone numbers (please leave a voice mail message if the person is not available to take the call):

- Dan Jarvis at: (801) 538-5338 office (801) 942-0871 home
- Carol Daniels at: (801) 538-5284 office
- Dustin Doucet at: (801) 538-5281 office (801) 733-0983 home

#### 3. Reporting Requirements

All required reports, forms and submittals will be promptly filed with the Division, including but not limited to the Entity Action Form (Form 6), Report of Water Encountered During Drilling (Form 7), Weekly Progress Reports for drilling and completion operations, and Sundry Notices and Reports on Wells requesting approval of change of plans or other operational actions.

4. Compliance with the State of Utah Antiquities Act forbids disturbance of archeological, historical, or paleontological remains. Should archeological, historical or paleontological remains be encountered during your operations, you are required to immediately suspend all operations and immediately inform the Trust Lands Administration and the Division of State History of the discovery of such remains.
5. Compliance with the Conditions of Approval/Application for Permit to Drill outlined in the Statement of Basis. (Copy Attached)
6. In accordance with Utah Admin. R.649-3-11, Directional Drilling, the operator shall submit a complete angular deviation and directional survey report to the Division within 30 days following completion of the well.
7. In accordance with Order in Cause No. 190-5(b) dated October 28, 1982, the Operator shall comply with requirements of Rules R649-3-31 and R649-3-27 pertaining to Designated Oil Shale Areas. Additionally, the operator shall ensure that the surface and/or production casing is properly cemented over the entire oil shale interval as defined by Rule R649-3-31. The Operator shall report the actual depth the oil shale is encountered to the Division.
8. Surface casing shall be cemented to the surface.

## DIVISION OF OIL, GAS AND MINING

### ***SPUDDING INFORMATION***

Name of Company: Kerr-McGee Oil & Gas Onshore, LP.

Well Name: NBU 1022-32D4DS

API No: 43-047-40207 Lease Type: State

Section 32 Township 10S Range 22E County Uintah

Drilling Contractor Pete Martin Drilling Rig # Bucket

### **SPUDDED:**

Date 04/30/09

Time 10:00 AM

How Dry

***Drilling will Commence:*** \_\_\_\_\_

Reported by Lew Weldon

Telephone # 435-781-7060

Date 05/05/2009 Signed RM

STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

FORM 6

**ENTITY ACTION FORM**

Operator: KERR McGEE OIL & GAS ONSHORE LP Operator Account Number: N 2995  
Address: 1368 SOUTH 1200 EAST  
city VERNAL  
state UT zip 84078 Phone Number: (435) 781-7024

**Well 1**

API Number	Well Name		QQ	Sec	Twp	Rng	County
4304740205	NBU 1022-32D4AS		NENW	32	10S	22E	UINTAH
Action Code	Current Entity Number	New Entity Number	Spud Date		Entity Assignment Effective Date		
<u>B</u>	99999	<u>2900</u>	4/30/2009		<u>5/19/09</u>		
Comments: MIRU PETE MARTIN BUCKET RIG. <u>WSMVD</u> SPUD WELL LOCATION ON 04/30/2009 AT 1200 HRS. <u>BHL = NWNW</u>							

**Well 2**

API Number	Well Name		QQ	Sec	Twp	Rng	County
4304740207	NBU 1022- <u>32D4D2</u>		NENW	32	10S	22E	UINTAH
Action Code	Current Entity Number	New Entity Number	Spud Date		Entity Assignment Effective Date		
<u>B</u>	99999	<u>2900</u>	4/30/2009		<u>5/19/09</u>		
Comments: MIRU PETE MARTIN BUCKET RIG. <u>WSMVD</u> SPUD WELL LOCATION ON 04/30/2009 AT 1000 HRS. <u>BHL = NWNW</u>							

**Well 3**

API Number	Well Name		QQ	Sec	Twp	Rng	County
4304740204	NBU 1022-32D1S		NENW	32	10S	22E	UINTAH
Action Code	Current Entity Number	New Entity Number	Spud Date		Entity Assignment Effective Date		
<u>B</u>	99999	<u>2900</u>	4/30/2009		<u>5/19/09</u>		
Comments: MIRU PETE MARTIN BUCKET RIG. <u>WSMVD</u> SPUD WELL LOCATION ON 04/30/2009 AT 0800 HRS. <u>BHL = NWNW</u>							

**ACTION CODES:**

- A - Establish new entity for new well (single well only)
- B - Add new well to existing entity (group or unit well)
- C - Re-assign well from one existing entity to another existing entity
- D - Re-assign well from one existing entity to a new entity
- E - Other (Explain in 'comments' section)

SHEILA UPCHEGO

Name (Please Print)

Signature

REGULATORY ANALYST

Title

5/1/2009

Date

**RECEIVED**

**MAY 01 2009**

**DIV. OF OIL, GAS & MINING**

STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

FORM 9

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

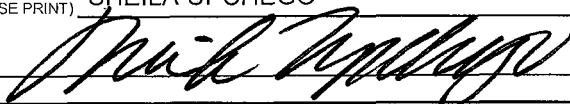
1. TYPE OF WELL OIL WELL <input type="checkbox"/> GAS WELL <input checked="" type="checkbox"/> OTHER _____		5. LEASE DESIGNATION AND SERIAL NUMBER: ST ML-22798
2. NAME OF OPERATOR: KERR McGEE OIL & GAS ONSHORE LP		6. IF INDIAN, ALLOTTEE OR TRIBE NAME:
3. ADDRESS OF OPERATOR: 1368 SOUTH 1200 EAST CITY VERNAL STATE UT ZIP 84078		7. UNIT or CA AGREEMENT NAME: UNIT #891008900A
PHONE NUMBER: (435) 781-7024		8. WELL NAME and NUMBER: NBU 1022-32D4DS
4. LOCATION OF WELL FOOTAGES AT SURFACE: 192'FNL, 2096'FWL QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: NENW 32 10S 22E		9. API NUMBER: 4304740207
COUNTY: UINTAH		10. FIELD AND POOL, OR WILDCAT: NATURAL BUTTES
STATE: UTAH		

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA			
TYPE OF SUBMISSION	TYPE OF ACTION		
<input type="checkbox"/> NOTICE OF INTENT (Submit in Duplicate) Approximate date work will start: _____	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> REPERFORATE CURRENT FORMATION
	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> SIDETRACK TO REPAIR WELL
	<input type="checkbox"/> CASING REPAIR	<input type="checkbox"/> NEW CONSTRUCTION	<input type="checkbox"/> TEMPORARILY ABANDON
	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> TUBING REPAIR
	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> VENT OR FLARE
<input checked="" type="checkbox"/> SUBSEQUENT REPORT (Submit Original Form Only) Date of work completion: _____	<input type="checkbox"/> CHANGE WELL NAME	<input type="checkbox"/> PLUG BACK	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> PRODUCTION (START/RESUME)	<input type="checkbox"/> WATER SHUT-OFF
	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> OTHER: _____
	<input type="checkbox"/> CONVERT WELL TYPE	<input type="checkbox"/> RECOMPLETE - DIFFERENT FORMATION	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

MIRU PETE MARTIN BUCKET RIG. DRILLED 20" CONDUCTOR HOLE TO 40'. RAN 14" 36.7# SCHEDULE 10 PIPE. CMT W/28 SX READY MIX.

SPUD WELL LOCATION ON 04/30/2009 AT 1000 HRS.

NAME (PLEASE PRINT) SHEILA UPCHEGO	TITLE REGULATORY ANALYST
SIGNATURE 	DATE 5/1/2009

(This space for State use only)

RECEIVED

MAY 18 2009

DIV. OF OIL, GAS & MINING

<b>STATE OF UTAH</b> DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING		<b>FORM 9</b>
<b>SUNDRY NOTICES AND REPORTS ON WELLS</b>  Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.		<b>5. LEASE DESIGNATION AND SERIAL NUMBER:</b> ST ML 22798
<b>1. TYPE OF WELL</b> Gas Well		<b>6. IF INDIAN, ALLOTTEE OR TRIBE NAME:</b>
<b>2. NAME OF OPERATOR:</b> KERR-MCGEE OIL & GAS ONSHORE, L.P.		<b>7. UNIT or CA AGREEMENT NAME:</b> NATURAL BUTTES
<b>3. ADDRESS OF OPERATOR:</b> P.O. Box 173779 1099 18th Street, Suite 600, Denver, CO, 80217 3779		<b>8. WELL NAME and NUMBER:</b> NBU 1022-32D4DS
<b>4. LOCATION OF WELL</b> <b>FOOTAGES AT SURFACE:</b> 0192 FNL 2096 FWL <b>QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:</b> Qtr/Qtr: NENW Section: 32 Township: 10.0S Range: 22.0E Meridian: S		<b>9. API NUMBER:</b> 43047402070000
<b>PHONE NUMBER:</b> 720 929-6587 Ext		<b>9. FIELD and POOL or WILDCAT:</b> NATURAL BUTTES
<b>COUNTY:</b> UINTAH		<b>STATE:</b> UTAH
<b>11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA</b>		
<b>TYPE OF SUBMISSION</b>	<b>TYPE OF ACTION</b>	
<input type="checkbox"/> <b>NOTICE OF INTENT</b> Approximate date work will start:	<input type="checkbox"/> <b>ACIDIZE</b>	
<input type="checkbox"/> <b>SUBSEQUENT REPORT</b> Date of Work Completion:	<input type="checkbox"/> <b>ALTER CASING</b>	
<input type="checkbox"/> <b>SPUD REPORT</b> Date of Spud:	<input type="checkbox"/> <b>CASING REPAIR</b>	
<input checked="" type="checkbox"/> <b>DRILLING REPORT</b> Report Date: 6/7/2009	<input type="checkbox"/> <b>CHANGE TO PREVIOUS PLANS</b>	
	<input type="checkbox"/> <b>CHANGE TUBING</b>	
	<input type="checkbox"/> <b>CHANGE WELL STATUS</b>	
	<input type="checkbox"/> <b>COMMINGLE PRODUCING FORMATIONS</b>	
	<input type="checkbox"/> <b>DEEPEN</b>	
	<input type="checkbox"/> <b>FRACTURE TREAT</b>	
	<input type="checkbox"/> <b>OPERATOR CHANGE</b>	
	<input type="checkbox"/> <b>PLUG AND ABANDON</b>	
	<input type="checkbox"/> <b>PRODUCTION START OR RESUME</b>	
	<input type="checkbox"/> <b>RECLAMATION OF WELL SITE</b>	
	<input type="checkbox"/> <b>REPERFORATE CURRENT FORMATION</b>	
	<input type="checkbox"/> <b>SIDETRACK TO REPAIR WELL</b>	
	<input type="checkbox"/> <b>TUBING REPAIR</b>	
	<input type="checkbox"/> <b>VENT OR FLARE</b>	
	<input type="checkbox"/> <b>WATER SHUTOFF</b>	
	<input type="checkbox"/> <b>SI TA STATUS EXTENSION</b>	
	<input type="checkbox"/> <b>WILDCAT WELL DETERMINATION</b>	
	<input type="checkbox"/> <b>OTHER:</b>	
<b>12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.</b>		
MIRU PROPETRO AIR RIG ON 06/05/2009. DRILLED 12 1/4" SURFACE HOLE TO 1960'. RAN 9 5/8" 40# J-55 SURFACE CSG. PMP 150 SX HIFILL CLASS G @11.0 PPG 3.82 YIELD. TAILED CMT W/200 SX PREM CLASS G @15.8 PPG 1.15 YIELD. DROP PLUG ON FLY AND DISPLACE W/142.5 BBLS OF H2O. LIFTED 200 PSI @3 BBLS/MIN. FULL CIRC 25 BBLS OF CMT TO SURFACE. RAN 200' OF 1" PIPE PMP 125 SX PREM CLASS G @15.8 PPG 1.15 YIELD. CMT TO SURFACE HOLE STAYED FULL WORT		
<div style="display: flex; justify-content: space-between;"> <div> <b>NAME (PLEASE PRINT)</b>            Sheila Upchego         </div> <div> <b>PHONE NUMBER</b>            435 781-7024         </div> <div> <b>TITLE</b>            Regulatory Analyst         </div> </div>		
<div style="display: flex; justify-content: space-between;"> <div> <b>SIGNATURE</b>            N/A         </div> <div> <b>DATE</b>            6/10/2009         </div> </div>		

<b>STATE OF UTAH</b> DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING		<b>FORM 9</b>
<b>SUNDRY NOTICES AND REPORTS ON WELLS</b>  Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.		<b>5. LEASE DESIGNATION AND SERIAL NUMBER:</b> ST ML 22798
<b>1. TYPE OF WELL</b> Gas Well		<b>6. IF INDIAN, ALLOTTEE OR TRIBE NAME:</b>
<b>2. NAME OF OPERATOR:</b> KERR-MCGEE OIL & GAS ONSHORE, L.P.		<b>7. UNIT or CA AGREEMENT NAME:</b> NATURAL BUTTES
<b>3. ADDRESS OF OPERATOR:</b> P.O. Box 173779 1099 18th Street, Suite 600, Denver, CO, 80217 3779		<b>8. WELL NAME and NUMBER:</b> NBU 1022-32D4DS
<b>4. LOCATION OF WELL</b> <b>FOOTAGES AT SURFACE:</b> 0192 FNL 2096 FWL <b>QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:</b> Qtr/Qtr: NENW Section: 32 Township: 10.0S Range: 22.0E Meridian: S		<b>9. API NUMBER:</b> 43047402070000
<b>PHONE NUMBER:</b> 720 929-6007 Ext		<b>9. FIELD and POOL or WILDCAT:</b> NATURAL BUTTES
<b>COUNTY:</b> UINTAH		<b>STATE:</b> UTAH
<b>11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA</b>		
<b>TYPE OF SUBMISSION</b>	<b>TYPE OF ACTION</b>	
<input type="checkbox"/> <b>NOTICE OF INTENT</b> Approximate date work will start:	<input type="checkbox"/> ACIDIZE <input type="checkbox"/> CHANGE TO PREVIOUS PLANS <input type="checkbox"/> CHANGE WELL STATUS <input type="checkbox"/> DEEPEN <input type="checkbox"/> OPERATOR CHANGE <input type="checkbox"/> PRODUCTION START OR RESUME <input type="checkbox"/> REPERFORATE CURRENT FORMATION <input type="checkbox"/> TUBING REPAIR <input type="checkbox"/> WATER SHUTOFF <input type="checkbox"/> WILDCAT WELL DETERMINATION	
<input type="checkbox"/> <b>SUBSEQUENT REPORT</b> Date of Work Completion:	<input type="checkbox"/> ALTER CASING <input type="checkbox"/> CHANGE TUBING <input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS <input type="checkbox"/> FRACTURE TREAT <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/> RECLAMATION OF WELL SITE <input type="checkbox"/> SIDETRACK TO REPAIR WELL <input type="checkbox"/> VENT OR FLARE <input type="checkbox"/> SI TA STATUS EXTENSION <input type="checkbox"/> OTHER:	
<input type="checkbox"/> <b>SPUD REPORT</b> Date of Spud:	<input type="checkbox"/> CASING REPAIR <input type="checkbox"/> CHANGE WELL NAME <input type="checkbox"/> CONVERT WELL TYPE <input type="checkbox"/> NEW CONSTRUCTION <input type="checkbox"/> PLUG BACK <input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION <input type="checkbox"/> TEMPORARY ABANDON <input type="checkbox"/> WATER DISPOSAL <input type="checkbox"/> APD EXTENSION	
<input checked="" type="checkbox"/> <b>DRILLING REPORT</b> Report Date: 8/9/2009	OTHER:	
<b>12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.</b> Finished drilling from 1960' to 8934' on 08/08/2009. Ran 4-1/2" 11.6# I-80 Production CSG. Lead CMT W/495 SX PREM LITE @ 11.7 PPG, 2.45 yield. Accepted by the Tailed CMT W/1385 SX 50/50 POZ-MIX @ 14.3 PPG, 1.25 Yield. Dropped plug and Displaced W/ 137.6 BBLS Fresh Water W/.01 GAL/BBL Clayfix II and 001, Gas and Mining GAL/BBL Aldacide G @ 2650 PSI-Bumped plug @ 3200 PSI-Floats held W/1.5 BBL Return-Good returns throughout CMT Job W/30 BBLS Cement back to surface. Release Ensign Rig 139 on 08/09/2009 at 23:59 HRS. August 10, 2009		
<b>NAME (PLEASE PRINT)</b> Andy Lytle		<b>PHONE NUMBER</b> 720 929-6100
<b>SIGNATURE</b> N/A		<b>TITLE</b> Regulatory Analyst
<b>DATE</b> 8/10/2009		<b>FOR RECORD ONLY</b>

<b>STATE OF UTAH</b> DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING		<b>FORM 9</b>
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<b>2. NAME OF OPERATOR:</b> KERR-MCGEE OIL & GAS ONSHORE, L.P.		<b>7. UNIT or CA AGREEMENT NAME:</b> NATURAL BUTTES
<b>3. ADDRESS OF OPERATOR:</b> P.O. Box 173779 1099 18th Street, Suite 600, Denver, CO, 80217 3779		<b>8. WELL NAME and NUMBER:</b> NBU 1022-32D4DS
<b>4. LOCATION OF WELL</b> <b>FOOTAGES AT SURFACE:</b> 0192 FNL 2096 FWL <b>QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:</b> Qtr/Qtr: NENW Section: 32 Township: 10.0S Range: 22.0E Meridian: S		<b>9. API NUMBER:</b> 43047402070000
<b>PHONE NUMBER:</b> 720 929-6007 Ext		<b>9. FIELD and POOL or WILDCAT:</b> NATURAL BUTTES
<b>COUNTY:</b> UINTAH		<b>STATE:</b> UTAH
<b>11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA</b>		
<b>TYPE OF SUBMISSION</b>	<b>TYPE OF ACTION</b>	
<input type="checkbox"/> <b>NOTICE OF INTENT</b> Approximate date work will start:	<input type="checkbox"/> <b>ACIDIZE</b>	
<input type="checkbox"/> <b>SUBSEQUENT REPORT</b> Date of Work Completion:	<input type="checkbox"/> <b>ALTER CASING</b>	
<input type="checkbox"/> <b>SPUD REPORT</b> Date of Spud:	<input type="checkbox"/> <b>CASING REPAIR</b>	
<input checked="" type="checkbox"/> <b>DRILLING REPORT</b> Report Date: 1/3/2010	<input type="checkbox"/> <b>CHANGE TO PREVIOUS PLANS</b>	
	<input type="checkbox"/> <b>CHANGE TUBING</b>	
	<input type="checkbox"/> <b>CHANGE WELL STATUS</b>	
	<input type="checkbox"/> <b>COMMINGLE PRODUCING FORMATIONS</b>	
	<input type="checkbox"/> <b>DEEPEN</b>	
	<input type="checkbox"/> <b>FRACTURE TREAT</b>	
	<input type="checkbox"/> <b>OPERATOR CHANGE</b>	
	<input type="checkbox"/> <b>PLUG AND ABANDON</b>	
	<input checked="" type="checkbox"/> <b>PRODUCTION START OR RESUME</b>	
	<input type="checkbox"/> <b>RECLAMATION OF WELL SITE</b>	
	<input type="checkbox"/> <b>REPERFORATE CURRENT FORMATION</b>	
	<input type="checkbox"/> <b>SIDETRACK TO REPAIR WELL</b>	
	<input type="checkbox"/> <b>TUBING REPAIR</b>	
	<input type="checkbox"/> <b>VENT OR FLARE</b>	
	<input type="checkbox"/> <b>WATER SHUTOFF</b>	
	<input type="checkbox"/> <b>SI TA STATUS EXTENSION</b>	
	<input type="checkbox"/> <b>WILDCAT WELL DETERMINATION</b>	
	<input type="checkbox"/> <b>OTHER:</b> _____	
<b>12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.</b> THE SUBJECT WELL WAS PLACED ON PRODUCTION ON 1/3/2010 AT 10:00 A.M. PLEASE REFER TO THE ATTACHED CHRONOLOGICAL WELL HISTORY		
<b>Accepted by the</b> <b>Utah Division of</b> <b>Oil, Gas and Mining</b> <b>FOR RECORD ONLY</b> January 13, 2010		
<b>NAME (PLEASE PRINT)</b> Andy Lytle	<b>PHONE NUMBER</b> 720 929-6100	<b>TITLE</b> Regulatory Analyst
<b>SIGNATURE</b> N/A	<b>DATE</b> 1/13/2010	

# US ROCKIES REGION

## Operation Summary Report

Well: NBU 1022-32D4DS [BLUE]	Spud Conductor: 4/30/2009	Spud Date: 6/5/2009
Project: UTAH-UINTAH	Site: NBU 1022-32C PAD	Rig Name No: ENSIGN 139/139, PROPETRO/
Event: DRILLING	Start Date: 6/4/2009	End Date: 8/9/2009
Active Datum: RKB @5,463.00ft (above Mean Sea Level)	UWI: 0/10/S/22/E/32/0/NENW/26/PM/N/192.00/W/0/2,096.00/0/0	

Date	Time Start-End	Duration (hr)	Phase	Code	Sub Code	P/U	MD From (ft)	Operation
6/5/2009	3:00 - 6:30	3.50	MIRU	01	B	P		RIG UP PRO PETRO RIG #11
	6:30 - 7:30	1.00	DRLSUR	02	A	P		DRILL W/ AIR HAMMER 40'-129'
	7:30 - 8:00	0.50	DRLSUR	05	A	P		TRIP OUT OF HOLE W/ AIR HAMMER
	8:00 - 9:00	1.00	MIRU	01	B	P		RIG UP AIR TO MUD DRILLING TOOLS
	9:00 - 10:30	1.50	DRLSUR	05	A	P		P/U 12 1/4" HC507Z, SN 7008622, P/U MOTOR AND DIRECTIONAL TOOLS.
	10:30 - 13:00	2.50	DRLSUR	03	E	P		WASH AND REAM 81'- 129' CHANGE OUT CROSSOVER SUBS
	13:00 - 16:30	3.50	DRLSUR	02	D	P		DRILL 129'-350' WOB 16K, RPM 45, ON/OFF PSI 1000/900
	16:30 - 17:00	0.50	DRLSUR	12	E	Z		WORK ON SCIENTIFIC DRILLING COMPUTER
	17:00 - 21:30	4.50	DRLSUR	02	D	P		DRILL SLIDE 350'-710' WOB 16K, RPM 45, ON/OFF PSI 1000/900
	21:30 - 22:00	0.50	DRLSUR	07	B	Z		WORK ON #2 MUD PUMP, STUCK VALVE
6/6/2009	22:00 - 0:00	2.00	DRLSUR	02	D	P		DRILL SLIDE 710'-860' WOB 16K, RPM 45, ON/OFF PSI 1000/900
	0:00 - 4:00	4.00	DRLSUR	02	D	P		DRILL, SLIDE F/ 860 TO 1090' 16K 40 TO 45 RPM TH MM RPM 94 PUMP PSI 1450' OFF BOTTOM 1200 PSI ROP 57.5' PER HOUR
	4:00 - 8:00	4.00	DRLSUR	07	A	Z		RIG REPAIRS. REPLACE MAIN DRIVE LINE.
	8:00 - 9:30	1.50	DRLSUR	02	D	P		DRILL, SLIDE F/ 1090 TO 1190' 16K 40 TO 45 RPM TH MM RPM 94 PUMP PSI 1450' OFF BOTTOM 1200 PSI ROP 66.6' PER HR
	9:30 - 10:30	1.00	DRLSUR	07	B	Z		RIG REPAIR, CHANGE OUT VALVES ON #2 PUMP.
6/7/2009	10:30 - 0:00	13.50	DRLSUR	02	D	P		DRILL, SLIDE F/ 1190 TO 1790' 16K 40 TO 45 RPM TH MM RPM 94 PUMP PSI 1450' OFF BOTTOM 1200 PSI ROP 44.44' PER HR.
	0:00 - 4:30	4.50	DRLSUR	02	D	P		DRILL SLIDE 1790'-1960' TD 04:30 16k 40 RPM, (DRILLED W/ PUMP W/ BAD VALVES.)
	4:30 - 5:30	1.00	CSG	04	A	P		CIRC HOLE CLEAN W/ AERATED WATER.
	5:30 - 10:00	4.50	CSG	05	D	P		LDDS, AND DIRECTIONAL TOOLS.
	10:00 - 12:00	2.00	CSG	11	B	P		RUN 45 JTS OF 40# J-55 LT&C 9 5/8" CSG. LAND CSG 1922' GL, FLOAT COLLAR 1881' GL.
7/31/2009	12:00 - 12:30	0.50	CSG	01	E	P		RIG DOWN AND RIG UP CEMENTERS.
	12:30 - 15:00	2.50	CSG	15	A	P		START FLUSH 40 BBLS, PUMP 150 SX OF #11 3.82 YD 23 GAL/SK HI FILL CEMENT. PUMP 200 SX OF 15.8# 1.15 YD 5 GAL/SK OF PREMIUM TAIL. DROP PLUG ON FLY AND DISPLACE W/ 142.5 BBLS OF H2O. LIFT 250 PSI @ 3BBLS/MIN, FULL CIRC. 25 BBLS OF CEMENT TO SURFACE. PUMP 125 SX OF 15.8# 1.15 YD 5 GAL SK OF TAIL DOWN 200' OF 1". CEMENT FELL SLOWLY WILL TOP OFF ON NEXT WELL.
	11:30 - 14:30	3.00	MIRU	01	C	P		RDRT- SKID RIG - RURT
	14:30 - 17:00	2.50	DRLPRO	15	A	P		N/UP BOPE
	17:00 - 21:30	4.50	DRLPRO	14	C	P		TEST BOPE - RAMS, CHOKE/CHOKE LINE, INNER MANUAL VALVES, FLOOR VALVES, IBOP 250 LOW 5000 HIGH, ANNULAR 250 LOW 2500 HIGH, CASING 1500
	21:30 - 22:00	0.50	DRLPRO	14	B	P		INSTALL WEARBUSHING
	22:00 - 23:30	1.50	DRLPRO	23		P		PRE-SPUD RIG NSPECTION
	23:30 - 0:00	0.50	DRLPRO	06	A	P		P/UP DIRECTIONAL BHA

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**US ROCKIES REGION**  
**Operation Summary Report**

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Project: UTAH-UINTAH		Site: NBU 1022-32C PAD		Rig Name No: ENSIGN 139/139, PROPETRO/	
Event: DRILLING		Start Date: 6/4/2009		End Date: 8/9/2009	
Active Datum: RKB @5,463.00ft (above Mean Sea Level)		UWI: 0/10/S/22/E/32/0/NENW/26/PM/N/192.00/W/0/2,096.00/0/0			

Date	Time Start-End	Duration (hr)	Phase	Code	Sub Code	P/U	MD From (ft)	Operation
8/1/2009	0:00 - 3:00	3.00	DRLPRO	06	A	P		P/UP DIRECTIONAL BHA - ORIENT TOOLS - RIH TAG CMT @ 1841'
	3:00 - 4:30	1.50	DRLPRO	02	F	P		DRILL CMT, FE & RATHOLE TO 1974'
	4:30 - 20:30	16.00	DRLPRO	02	D	P		DRILL/SLIDE F/1974' TO 3212' (1238' @ 77.4fph) MW 8.4, VIS 27, WOB 18, RPM 45, MM RPM 112, TQ 8/9, GPM 487, SLIDE 2035-2045, 2125-2137, 2170-2180, 2260-2270, 2306-2318, 2351-2363, 2441-2463, 2486-2496, 2540-2548, 2622-2630, 2668-2678, 2897-2905, WOB 15, MM RPM 112, GPM 487, DIFF 190/300
	20:30 - 21:00	0.50	DRLPRO	07	A	P		RIG SER
	21:00 - 0:00	3.00	DRLPRO	02	D	P		DRILL/SLIDE F/3212' TO 3535' ( 323' @ 107.7fph) MW 8.4, VIS 27, WOB 18, RPM 45, MM RPM 112, TQ 9/11, GPM 487,
								DRILL/SLIDE F/3535' TO 4297' (762' @ 63.5fph) MW 8.4, VIS 26, WOB 18, RPM 45, MM RPM 112, TQ 12, GPM 487, SLIDE 3538-3553, 3578-3588, 3626-3641, 3669-3679, 3759-3774, 3846-3854, 3891-3896, 3935-3941, 4026-4035, 4116-4122, 4161-4167, 4207-4222, WOB 15/18, MM RPM 112, GPM 487, DIFF 200
8/2/2009	0:00 - 12:00	12.00	DRLPRO	02	D	P		RIG SER
	12:00 - 12:30	0.50	DRLPRO	07	A	P		DRILL/SLIDE F/4297' TO 5118' (821' @ 71.4fph) MW 8.4, VIS 26, WOB 18, RPM 45, MM RPM 112, TQ 9/18, GPM 487, SLIDE 4388-4406, 4478-4487, 4494-4502, 4534-4544, 4569-4574, 4709-4719, 4840-4852, 4931-4943, WOB 15/18, MM RPM 112, GPM 487, DIFF 150/200
	12:30 - 0:00	11.50	DRLPRO	02	D	P		DRILL/SLIDE F/5118' TO 5440' (322' @ 71.6fph) MW 8.4, VIS 26, WOB 18, RPM 45, MM RPM 112, TQ 12, GPM 487, SLIDE 5389-5404, WOB 18, MM RPM 112, GPM 487, DIFF 200
8/3/2009	0:00 - 4:30	4.50	DRLPRO	02	D	P		CHECK SURFACE EQUIP F/PSI LOSS - LOST 600 PSI - NO PROBLEMS W/SURFACE EQUIPMENT
	4:30 - 6:30	2.00	DRLPRO	04	A	P		RAISE MW F/WATER TO 8.6 - VIS 38
	6:30 - 8:30	2.00	DRLPRO	04	B	P		POOH WET F/PSI LOSS - VISUAL INSPECTION OF DP, HWDP AND DIRECTIONAL ASSY SHOWED NO PROBLEMS TO ACCOUNT FOR PSI LOSS - L/DN MM (POSSIBLE INTERNAL MM PROBLEMS)
	8:30 - 14:30	6.00	DRLPRO	05	A	P		P/UP 1.5 deg .14 RPG MM - RR BIT #1 - RIH TO 1209' - 1080 PSI, RIH TO 1936' - 1125 PSI, RIH TO 3800' - 1350 PSI, CONTINUE RIH TO 5440' - OFF BTTM PSI 1450, ON BTTM PSI 1700
	14:30 - 20:00	5.50	DRLPRO	05	A	P		DRILL F/5440' TO 5650' (210' @ 52.5fph) MW 8.7 VIS 38, WOB 18, RPM 50, MM RPM 68, TQ 12, GPM 487,
	20:00 - 0:00	4.00	DRLPRO	02	D	P		DRILL/SLIDE F/5650' TO 6204' (554' @ 39.6fph) MW 9.1 VIS 44, WOB 18/19, RPM 50, MM RPM 68, TQ 15, GPM 487, SLIDE 6023-6038, WOB 15/18, MM RPM 68, GPM 487, DIFF 150
8/4/2009	0:00 - 14:00	14.00	DRLPRO	02	D	P		RIG SER
	14:00 - 14:30	0.50	DRLPRO	07	A	P		DRILL/SLIDE F/6204' TO 6550' (346' @ 36.4fph) MW 9.2, VIS 42, WOB 20, RPM 50, MM RPM 68, TQ 12, GPM 487, SLIDE 6486-6502, WOB 20, MM RPM 68, GPM 487, DIFF 120/150
	14:30 - 0:00	9.50	DRLPRO	02	D	P		DRILL/SLIDE F/6550' TO 6928' (378' @ 37.8fph) MW 9.6 VIS 45, WOB 22, RPM 50, MM RPM 68, TQ 15.8, GPM 487, SLIDE 6667-6676, 6838-6853,
8/5/2009	0:00 - 10:00	10.00	DRLPRO	02	D	P		RIG SER
	10:00 - 10:30	0.50	DRLPRO	07	A	P		

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Project: UTAH-UINTAH		Site: NBU 1022-32C PAD			Rig Name No: ENSIGN 139/139, PROPETRO/
Event: DRILLING		Start Date: 6/4/2009		End Date: 8/9/2009	
Active Datum: RKB @5,463.00ft (above Mean Sea Level)			UWI: 0/10/S/22/E/32/0/NENW/26/PM/N/192.00/W/0/2,096.00/0/0		

Date	Time Start-End	Duration (hr)	Phase	Code	Sub Code	P/U	MD From (ft)	Operation
8/6/2009	10:30 - 0:00	13.50	DRLPRO	02	D	P		DRILL/SLIDE F/6928' TO 7450' (522' @ 38.7fph) MW 10.2, VIS 42, WOB 22, RPM 50, MM RPM 68, TQ 16, GPM 487, SLIDE 7109-7129, 7290-7308, WOB 20, MM RPM 68, GPM 487, DIFF 180
	0:00 - 11:00	11.00	DRLPRO	02	D	P		DRILL/SLIDE F/7450' TO 7834' (384' @ 34.9fph) MW 10.4, VIS 44, WOB 22, RPM 50, MM RPM 68, TQ 17, GPM 487, SLIDE 7562-7582, 7743-7769, WOB 20, MM RPM 68, GPM 487, DIFF 160/180
	11:00 - 11:30	0.50	DRLPRO	07	A	P		RIG SER
	11:30 - 0:00	12.50	DRLPRO	02	D	P		DRILG F/7834' TO 8190' (356' @ 28.5fph) MW 11.2, VIS 45, WOB 22, RPM 50, MM RPM 71, TQ 17, GPM 512
8/7/2009	0:00 - 0:30	0.50	DRLPRO	02	D	P		DRLG F/8190' TO 8195' ( 5') MW 11.2, VIS 43, WOB 22/24, RPM 50, MM RPM 71, TQ 18, GPM 512
	0:30 - 1:00	0.50	DRLPRO	08	B	Z		TROUBLESHOOT IRON DERRICKHAND - RESET EMERGENCY SHUT DOWN SWITCH
	1:00 - 9:00	8.00	DRLPRO	02	D	P		DRLG F/8195' TO 8386' (191' @ 23.9fph) MW 11.6, VIS 42, WOB 24, RPM 50, MM RPM 71, TQ 18, GPM 512
	9:00 - 17:30	8.50	DRLPRO	06	A	P		TFNB - BACK REAM 1st 10 STDS 8386' TO 7486' - PUMP SLUG - POOH - RACK BACK DIRECTIONAL BHA (TIGHT @ 5655')
8/8/2009	17:30 - 23:00	5.50	DRLPRO	06	A	P		P/UP BIT #2 - RIH TO 8375' - WASH F/8375' TO 8386' - NO FILL (TIGHT @ 7206')
	23:00 - 0:00	1.00	DRLPRO	02	D	P		DRLG F/8386' TO 8455' (69') MW 11.6, VIS 42, WOB 18/20, RPM 50, MM RPM 68, TQ 18, GPM 487
	0:00 - 9:30	9.50	DRLPRO	02	D	P		DRLG F/8455' TO 8934' (479' @ 50.4fph) - (TD WELL 8651' TVD) MW 11.7, VIS 42, WOB 20, RPM 50, MM RPM 68, TQ 19, GPM 487
	9:30 - 11:00	1.50	DRLPRO	05	A	P		CIRC HOLE CLEAN
	11:00 - 14:30	3.50	DRLPRO	06	E	P		W/TRIP TO 7134' - 20 stds - NO HOLE PROBLEMS
	14:30 - 16:00	1.50	DRLPRO	05	A	P		CIRC HOLE CLEAN
	16:00 - 22:30	6.50	DRLPRO	06	B	P		POOH F/LOGS - L/DN MM - (NO HOLE PROBLEMS) - (L/DN 15 JTS HWDP TO BE HARDBANDED)
	22:30 - 23:00	0.50	DRLPRO	14	B	P		RETRIEVE WEARBUSHING
8/9/2009	23:00 - 0:00	1.00	DRLPRO	11	D	P		HPJSM - R/UP HALLIBURTON - RUN TRIPLE COMBO TO LOGGERS TD @ 8928'
	0:00 - 4:00	4.00	EVALPR	11	D	P		RUN TRIPLE COMBO TO LOGGERS TD @ 8928'
	4:00 - 11:30	7.50	CSG	12	C	P		HPJSM - R/UP KIMZEY & RUN 211 JTS, 1 MARKER JT & 15 CENT. 4.5" 11.60 I-80 PROD CSG - SPACE OUT CASING 2' ABOVE WELL HEAD @ 8918'
	11:30 - 13:00	1.50	CSG	05	A	P		CIRC
	13:00 - 16:30	3.50	CSG	12	E	P		HPJSM - R/UP HALLIBURTON CMT HEAD - TEST LINES 5700 PSI, CEMENT 4.5" PROD CSG - 40 BBLs FRESH WATER SPACER, 495 SKS LEAD 11.7 PPG 2.45 YIELD, 1385 SKS TAIL 14.3 PPG 1.25 YIELD, DROPPED PLUG & DISPLACED W/137.6 BBLs FRESH WATER W/0.1 gal/bbl
								CLAYFIX II AND 0.01 gal/bbl ALDACIDE G @ 2650 PSI - BUMPED PLUG @ 3200 PSI - FLOATS HELD W/1.5 BBL RETURN - GOOD RETURNS DURING CMT JOB W/30 BBLs CEMENT BACK TO SURFACE - R/DN HALLIBURTON
	16:30 - 18:00	1.50	CSG	12	C	P		WASHED CMT F/BOP - LANDED CASING @ 8920' - VERIFY HANGER LANDED - L/OUT LANDING JT
	18:00 - 21:00	3.00	DRLPRO	14	A	P		N/DN BOPE - CLEAN RIG TANKS - TRANSFER 700 BBLs MUD TO SECONDARY TANKS

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Project: UTAH-UINTAH			Site: NBU 1022-32C PAD				Rig Name No: ENSIGN 139/139, PROPETRO/		
Event: DRILLING			Start Date: 6/4/2009				End Date: 8/9/2009		
Active Datum: RKB @5,463.00ft (above Mean Sea Level)			UWI: 0/10/S/22/E/32/0/NENW/26/PM/N/192.00/W/0/2,096.00/0/0						
Date	Time Start-End	Duration (hr)	Phase	Code	Sub Code	P/U	MD From (ft)	Operation	
	21:00 - 0:00	3.00	MAINT	09	A	P		SLIP & CUT DRILL LINE - RELEASE RIG @ 23:59 - 8/9/09	

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# US ROCKIES REGION

## Operation Summary Report

Well: NBU 1022-32D4DS [BLUE]	Spud Conductor: 4/30/2009	Spud Date: 6/5/2009
Project: UTAH-UINTAH	Site: NBU 1022-32C PAD	Rig Name No:
Event: COMPLETION	Start Date: 12/24/2009	End Date: 1/5/2010
Active Datum: RKB @5,463.00ft (above Mean Sea Level)	UWI: 0/10/S/22/E/32/0/NENW/26/PM/N/192.00/W/0/2,096.00/0/0	

Date	Time Start-End	Duration (hr)	Phase	Code	Sub Code	P/U	MD From (ft)	Operation
12/28/2009	6:00 - 6:30	0.50	COMP	48		P		HSM, MIRU
	6:30 - 23:59	17.48	COMP	36	E	P		STG #1) P/U RIH W/ PERF GUN 3-3/8 EXPEND [SCALLOP] 23 GRM, 0.36" HOLE, PERF MESAVERDE. 8563'-8566' 4 SPF, 90* PH, 12 HOLES. 8530'-8532' 4 SPF, 90* PH, 8 HOLES. 8492'-8494' 4 SPF, 90* PH, 8 HOLES. 8436'-8438' 4 SPF, 90* PH, 8 HOLES. 8380'-8382' 4 SPF, 90* PH, 8 HOLES. [44 HOLES]  WAIT ON SCHLUMBERGER TO RIG UP & FIX FRAC VAN. [9-1/2 HRS] P/T SURFACE LINES TO 8500#.  WHP= 640 #, BRK DN PERF @ 4659 # @ 6 B/M, INJ RT= 51.5 B/M, INJ PSI= 5250#, ISIP= 2570#, FG=0.86, PUMP'D 2519 BBLS SLK WTR & 77190 # 30/50 OTTAWA SD, W/ 5000# RESIN COAT IN TAIL, CALC 67% PERF OPEN, ISIP= 2519#, FG=0.73., AR= 47.1, AP= 4694#, MR= 52.3, MP=6698#, NPI= -- 51#,  ( STG #2 ) RIH W/ HALLIBURTON 8K CBP AND PERF GUNS, SET CBP @ 8336', PERF THE MESAVERDE @ 8297'- 8306', 8270'- 8271, 4-SPF, USING 3 3/8" SCALLOP GUNS, 23 gm, 90* PHS 0.36" HOLE, 40 HOLES, WHP = 790 #, BRK DN PERF @ 4255 # @ 6 B/M, INJ-RT = 51.2 B/M, INJ-P = 5000 #, ISIP = 2737#, F.G.= 0.76 , CALC ALL PERF OPEN, PUMP 2469 BBLS SLK WTR & 98349 # OTTAWA SD, W/ TAIL IN W/ 5000# TLC SD, ISIP = 2735 #, F.G.= 0.73 , NPI = -2 #, MP = 6177 #, MR = 51.2 B/M, AP = 4665 #, AR = 49.2 B/M, PUMP BRINE WTR THRU PUMP AND FRAC VALVES  ( STG #3 ) RIH W/ BAKER 8K CBP AND PERF GUNS, SET CBP @ 8244', PERF THE MESAVERDE @ 8212'- 8214', 8176'- 8178', 8149'- 8150', 8103'- 8104', 8043'- 8044', 8008'- 8010', 4-SPF, USING 3 3/8" SCALLOP GUNS, 23 gm, 0.36" HOLE, 90* PHS, 36 HOLES, HSM, COLD WEATHER PERF & FRAC
12/29/2009	7:00 - 7:15	0.25	COMP	48		P		

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Project: UTAH-UINTAH		Site: NBU 1022-32C PAD	Rig Name No:
Event: COMPLETION		Start Date: 12/24/2009	End Date: 1/5/2010
Active Datum: RKB @5,463.00ft (above Mean Sea Level)		UWI: 0/10/S/22/E/32/0/NENW/26/PM/N/192.00/W/0/2,096.00/0/0	

Date	Time Start-End	Duration (hr)	Phase	Code	Sub Code	P/U	MD From (ft)	Operation
	7:15 - 20:00	12.75	COMP	36	E	P		<p>FRAC STG # 3 MESA VERDE 8008'-8214' 36 HOLES.</p> <p>STG #3] WHP=2250#, BRK DN PERFS @=3861#, INJ PSI=5600#, INJT RT=51.7, ISIP=2746#, FG=.77, PUMP'D 2288 BBLS SLK WTR W/ 81693# 30/50 M,ESH W/ 2500# RESIN COAT IN TAIL, ISIP=2632#, FG=.75, AR=48.1, AP=4673#, MR=50.8, MP=6728#, NPI=-114# 30/36 CALC PERFS OPEN 83%.</p> <p>STG #4] P/U RIH W/ BKR 8K CBP &amp; PERF GUN. SET CBP @=, PERF MESAVERDE USING 3-3/8 EXPEND, [SCALLOP] 23 GRM, 0.36" HOLE. 7757'-7760' 4 SPF, 90° PH, 12 HOLES. 7702'-7705' 4 SPF, 90° PH, 12 HOLES. 7595'-7596' 4 SPF, 90° PH, 4 HOLES. 7563'-7563' 4 SPF, 90° PH, 4 HOLES. 7549'-7550' 4 SPF, 90° PH, 4 HOLES. [36 HOLES]</p> <p>WHP=1340#, BRK DN PERFS @=2474#, INJ PSI=4800#, INJT RT=50.7, ISIP=1807#, FG=.67, PUMP'D 852 BBLS SLK WTR W/ 31295# 30/50 M,ESH W/ 5000# RESIN COAT IN TAIL, ISIP=2350#, FG=.74, AR=44.5, AP=4143#, MR=50.8, MP=5314#, NPI=543# 27/36 CALC PERFS OPEN 75%.</p> <p>STG #5] P/U RIH W/ BKR 8K CBP &amp; PERF GUN. SET CBP @ 7434', PERF MESAVERDE USING 3-3/8 EXPEND, [SCALLOP] 23 GRM, 0.36" HOLE. 7400'-7404' 4 SPF, 90° PH, 16 HOLES. 7362'-7365' 4 SPF, 90° PH, 12 HOLES. 7313'-7315' 4 SPF, 90° PH, 8 HOLES. [36 HOLES]</p> <p>WHP=1430#, BRK DN PERFS @=2418#, INJ PSI=4510#, INJT RT=51.1, ISIP=1780#, FG=.66, PUMP'D 684 BBLS SLK WTR W/ 22681# 30/50 M,ESH W/ 5000# RESIN COAT IN TAIL, ISIP=2380#, FG=.75, AR=42.2, AP=3974#, MR=52.1, MP=4980#, NPI=600# 31/36 CALC PERFS OPEN 87%.</p> <p>STG #6] P/U RIH W/ BKR 8K CBP &amp; PERF GUN. SET CBP @ 7237', PERF MESAVERDE USING 3-3/8 EXPEND, [SCALLOP] 23 GRM, 0.36" HOLE. 7205'-7207' 4 SPF, 90° PH, 8 HOLES. 7148'-7154' 4 SPF, 90° PH, 24 HOLES. 7117'-7119' 4 SPF, 90° PH, 8 HOLES. [40 HOLES]</p> <p>WHP=1237#, BRK DN PERFS @ 2670# @ 6 B/M, INJ PSI= 4850#, INJT RT= 50.7 B/M, ISIP= 1850#, FG=.069, PUMP'D 660 BBLS SLK WTR W/ 24154# 30/50 M,ESH W/ 5000# RESIN COAT IN TAIL, ISIP= 2770#, FG=.082, AR= 43.5 B/M, AP= 4097#, MR= 50.8 B/M, MP= 5054#, NPI= 920#, 27/40 CALC PERFS OPEN 67%.</p> <p>( KILL PLUG ) RIH W/ BAKER 8K CBP, SET CBP @ 7067', R/D WIRELINE AND FRAC, DAY 3 - JSA &amp; SM. NO H2S PRESENT.</p>
12/30/2009	7:00 - 7:15	0.25	COMP	48		P		

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Project: UTAH-UINTAH		Site: NBU 1022-32C PAD		Rig Name No:	
Event: COMPLETION		Start Date: 12/24/2009		End Date: 1/5/2010	
Active Datum: RKB @5,463.00ft (above Mean Sea Level)		UWI: 0/10/S/22/E/32/0/NENW/26/PM/N/192.00/W/0/2,096.00/0/0			

Date	Time Start-End	Duration (hr)	Phase	Code	Sub Code	P/U	MD From (ft)	Operation
	7:15 - 18:00	10.75	COMP	30	A	P		MIRU SERVICE UNIT, SPOT EQUIP., WHP = 0 PSI. ND FRAC VALVES, NU BOP. RU FLOOR & TBG EQUIP., PREP & TALLY TBG. PU 3 7/8" BIT, POBS & XN NIPPLE. RIH ON NEW 2 3/8" TBG. EOT @ 4564'. SWI - FREEZE PROTECT WELL HEAD.
12/31/2009	7:00 - 7:15	0.25	COMP	48		P		18:00 - SDFN. PREP TO CONT. TO RIH W/TBG TO DRLG PLGS IN AM.
	7:15 - 18:00	10.75	COMP	31	I	P		DAY 4 - JSA & SM. NO H2S PRESENT.
								WHP = 0 PSI. EOT @ 4564'. CONT. TO RIH W/TBG. TAG FILL @ 7067'. C/O 0' OF SND.
								CBP 1) DRLG OUT BAKER 8K CBP @ 7067' IN 8 MIN. 650 PSI DIFF. RIH TAG FILL @ 7212'. C/O 25' OF SND. FCP = 25 PSI.
								CBP 2) DRLG OUT BAKER 8K CBP @ 7237' IN 10 MIN. 600 PSI DIFF. RIH TAG FILL @ 7389'. C/O 45' OF SND. FCP = 50 PSI.
								CBP 3) DRLG OUT BAKER 8K CBP @ 7434' IN 11 MIN. 600 PSI DIFF. RIH TAG FILL @ 7760'. C/O 30' OF SND. FCP = 50 PSI.
								CBP 4) DRLG OUT BAKER 8K CBP @ 7790' IN 30 MIN. 900 PSI DIFF. RIH TAG FILL @ 7770'. C/O 20' OF SND. FCP = 100 PSI.
								CBP 5) DRLG OUT BAKER 8K CBP @ 8244' IN 5 MIN. 700 PSI DIFF. RIH TAG FILL @ 8306'. C/O 25' OF SND. FCP = 175 PSI.
								CBP 6) DRLG OUT BAKER 8K CBP @ 8336' IN 15 MIN. 750 PSI DIFF. RIH TAG FILL @ 8845'. C/O 30' OF SND. PBD @ 8875'. FCP = 350 PSI. CIRC WELL CLEAN. RD PWR SWVL, RU TBG EQUIP. POOH & LD 62 JTS TBG ON FLOAT. (94 TOTAL JTS ON FLOAT). LND TBG ON HANGER W/219 JTS NEW 2 3/8" 4.7# L80 TBG. EOT @ 6935.71'. XN NIPPLE @ 6933.51'. AVG 13 MIN/PLG, C/O 175' OF SND.
								RD FLOOR & TBG EQUIP. NDBOP, DROP BALL, NUWH. PMP OFF BIT @ 1100 PSI. WAIT 30 MIN FOR BIT TO FALL TO BTM. OPEN WELL TO F.B.T. ON 20 CHOKE. FTP = 000 PSI, SICP = 1500 PSI. TURN WELL TO F.B.C.
1/1/2010	7:00 -			33	A			18:00 SDFWE.
								7 AM FLBK REPORT: CP 2000#, TP 1175#, 20/64" CK, 62 BWPH, LIGHT SAND, LIGHT GAS
								TTL BBLS RECOVERED: 2685
								BBLS LEFT TO RECOVER: 6670
1/2/2010	7:00 -			33	A			7 AM FLBK REPORT: CP 2450#, TP 1300#, 20/64" CK, 43 BWPH, LIGHT SAND, LIGHT GAS
								TTL BBLS RECOVERED: 3891
								BBLS LEFT TO RECOVER: 5464
1/3/2010	7:00 -			33	A			7 AM FLBK REPORT: CP 2250#, TP 1250#, 20/64" CK, 32 BWPH, LIGHT SAND, - GAS
								TTL BBLS RECOVERED: 4791
								BBLS LEFT TO RECOVER: 4564

**US ROCKIES REGION**  
**Operation Summary Report**

Well: NBU 1022-32D4DS [BLUE]		Spud Conductor: 4/30/2009		Spud Date: 6/5/2009	
Project: UTAH-UINTAH		Site: NBU 1022-32C PAD		Rig Name No:	
Event: COMPLETION		Start Date: 12/24/2009		End Date: 1/5/2010	
Active Datum: RKB @5,463.00ft (above Mean Sea Level)		UWI: 0/10/S/22/E/32/0/NENW/26/PM/N/192.00/W/0/2,096.00/0/0			

Date	Time Start-End	Duration (hr)	Phase	Code	Sub Code	P/U	MD From (ft)	Operation
	10:00 -		PROD	50				WELL TURNED TO SALE @ 1000 HR ON 1/3/10 - FTP 1250#, CP 2500#, 800 MCFD, 43 BWPD, 20/64 CK
1/4/2010	7:00 -			33	A			7 AM FLBK REPORT: CP 1975#, TP 1175#, 20/64" CK, 27 BWPH, LIGHT SAND, - GAS TTL BBLS RECOVERED: 5498 BBLS LEFT TO RECOVER: 3857
1/5/2010	7:00 -			33	A			7 AM FLBK REPORT: CP 1725#, TP 1050#, 20/64" CK, 19 BWPH, TRACE SAND, 2000 GAS TTL BBLS RECOVERED: 6181 BBLS LEFT TO RECOVER: 3174
	7:00 -			33	A			7 AM FLBK REPORT: CP 1775#, TP 1075#, 20/64" CK, 19 BWPH, LIGHT SAND, - GAS TTL BBLS RECOVERED: 6048 BBLS LEFT TO RECOVER: 3307

**RECEIVED** January 13, 2010